

**Using mindful self-compassion (MSC) as a strategy to reduce stress and develop self-compassion in nursing students**

by

TUNG, Ling Ngai

A Thesis Submitted to  
The Education University of Hong Kong  
in Partial Fulfillment of the Requirement for  
the Degree of Doctor of Philosophy

August 2019

ProQuest Number: 27837495

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent on the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 27837495

Published by ProQuest LLC (2020). Copyright of the Dissertation is held by the Author.

All Rights Reserved.

This work is protected against unauthorized copying under Title 17, United States Code  
Microform Edition © ProQuest LLC.

ProQuest LLC  
789 East Eisenhower Parkway  
P.O. Box 1346  
Ann Arbor, MI 48106 - 1346

## Statement of Originality

I, TUNG, Ling Ngai, hereby declare that I am the sole author of the thesis and the material presented in this thesis is my original work except those indicated in the acknowledgement. I further declare that I have followed the University's policies and regulations on Academic Honesty, Copyright and Plagiarism in writing the thesis and no material in this thesis has been submitted for a degree in this or other universities.

## Abstract

The aim of the current study is to explore the effects of a mindful self-compassion (MSC) program on nursing students' self-compassion with mindfulness, compassion fatigue, and stress. The study was a randomized wait-list controlled design conducted in Hong Kong. All participating subjects were students with clinical practicum experience in Registered Nurse (RN) programs. They were randomized into equal-sized intervention and wait-list control groups. The subjects in the intervention (INT) group participated first in an 8-week MSC program conducted by a certified MSC teacher, then followed by the subjects in the wait-list control (WLC) group with the same MSC program. Data were collected at various time points: before the MSC program, 4 weeks into the MSC program, upon completion of the MSC program, and 4 weeks after completion of the MSC program. The effects of the MSC training were measured using the Five Facet Mindfulness Questionnaire - Chinese version (FFMQ-C), Self-Compassion Scale – Chinese (SCS-C), Chinese Professional Quality of Life scale (Chinese ProQOL-5), and the Chinese Perceived Stress Scale (Chinese PSS). When comparing the two groups, significant differences were identified in individual facets of mindfulness (observing, acting-with-awareness, nonjudging-of-inner-experience, and nonreactivity-of-inner-experience) and their overall scores using the FFMQ-C questionnaire; constructs of self-compassion (self-kindness, self-judgment, common-humanity, isolation, mindfulness, and over-identification) and their overall scores in the SCS-C questionnaire; levels of compassion fatigue (compassion satisfaction and burnout) using the Chinese ProQOL-5 questionnaire; and levels of stress using the Chinese PSS questionnaire. The MSC program was found to be effective in increasing the mindfulness and self-compassion levels, while decreasing the compassion fatigue, burnout, and stress levels of the nursing students. The findings suggest that the MSC program can be used as a stress reduction strategy for

nursing students. To extend the applicability of the MSC program, future studies may focus on participants with psychological problems.

*Keywords:* Mindful Self-Compassion, mindfulness, compassion fatigue, stress, nursing education

## Acknowledgment

First of all, I would like to express my genuine appreciation to my supervisors, Professor Joanne Chung, Professor Thomas Wong and Dr. Matsunobu Koji, for their patience and meticulousness to me, guidance and supervision on the study, and finally leading to the completion.

My sincere appreciation also goes to Mr. Vincent Yan, Mr. Marcy Choi and Mr. Teddy Lee. Their technical assistance, practical advice and detailed explanation have improved the efficiency data collection and data analysis.

I would like to thank Dr. Peggy Chow and Dr. Queenie Law as well. Studying doctoral degree is really a long journey. Throughout this journey, some of our friends have chosen to withdraw from the study. In fact, this idea has appeared in my mind repeatedly. I could say, without the support from my peers, I would not be able to see any light in the darkness.

My very special thanks must go to my family members, including my wife Peggy Chan, my daughter Mio Tung, my sister Linda Tung, and my parents. Their encouragement and support throughout the whole course of my study is an important drive for me. Their understanding, love and support has motivated me to face and overcome every challenge.

Finally, my late cat Chin Chin has accompanied me since I was studying the Master Degree in 2007. Unluckily she could not wait for my PhD graduation and passed away in October 2019. I would like to take this chance to thank for her presence in my life.

## Table of Contents

Statement of Originality	i
Abstract	ii
Acknowledgment	iv
Table of Contents	v
List of Abbreviations	x
List of Figures	xii
List of Tables	xiii
<b>Chapter 1: Introduction</b>	<b>1</b>
1.1    Background	1
1.2    Stress in Nursing Students	1
1.3    Occupational Stress in Nurses	5
1.4    Suicide among Nurses	6
1.5    Stress Reduction Strategies	8
1.6    Problem Statement	9
1.7    Research Questions and Hypotheses	10
1.8    Significance of the Research	11
1.9    Organization of the Thesis	12
<b>Chapter 2: Literature Review</b>	<b>13</b>
2.1    Introduction	13
2.2    Importance of Mental Well Being	14
2.3    Empathy and Compassion in Nursing	16
2.4    Compassion Fatigue in Nursing	19

2.5	Mechanism of Stress	21
2.6	Mindfulness-based Interventions	24
2.7	Mindfulness and Self-Compassion – Buddhist Perspective	27
2.7.1	Three Characteristics of Existence ( <i>Tilakkhana</i> )	28
2.7.2	Four Noble Truths ( <i>Cattari Ariyasaccani</i> )	28
2.7.3	Four Immeasurable Minds ( <i>Brahmavihara</i> )	30
2.8	Compassion-based Interventions	33
2.8.1	Compassion-focused therapy (CFT)	34
2.8.2	Mindful Self-Compassion (MSC)	35
2.9	Self-compassion and Mindfulness	38
2.9.1	Self-kindness vs. Self-judgment	38
2.9.2	Common Humanity vs. Isolation	39
2.9.3	Mindfulness vs. Over-identification	40
2.10	Summary	42
<b>Chapter 3: Conceptual Framework</b>		<b>43</b>
3.1	Introduction	43
3.2	Conceptual Framework	43
3.3	Outcome Measure Tools	47
3.3.1	Stress	47
3.3.1.1	Chinese perceived stress scale (Chinese PSS)	47
3.3.2	Self-Compassion	47
3.3.2.1	The Compassion Scale (CS)	47
3.3.2.2	Self-Compassion Scale – Chinese(SCS-C)	48
3.3.3	Compassion Fatigue	48



3.3.3.1 Chinese Professional Quality of Life scale (Chinese ProQOL-5)	48
3.3.4 Mindfulness	49
3.3.4.1 Mindfulness Attention Awareness Scale (MAAS)	49
3.3.4.2 Freiburg Mindfulness Inventory (FMI)	50
3.3.4.3 Cognitive and Affective Mindfulness Scale Revised (CAMS-R)	52
3.3.4.4 Kentucky Inventory of Mindfulness Skills (KIMS)	53
3.3.4.5 Southampton Mindfulness Questionnaire (SMQ)	53
3.3.4.6 Five Facet Mindfulness Questionnaire – Chinese version (FFMQ-C)	54
3.4 Summary	55
<b>Chapter 4: Methodology</b>	<b>56</b>
4.1 Introduction	56
4.2 Study Design	56
4.3 Study Population and Sampling	56
4.3.1 Inclusion Criteria	57
4.3.2 Exclusion Criteria	57
4.4 Randomization	57
4.5 Intervention: Mindful self-compassion (MSC) program	58
4.6 Outcome Measures	61
4.6.1 Stress	61
4.6.2 Self-Compassion Levels	62
4.6.3 Compassion Satisfaction, Burnout, and Secondary Traumatic Stress	63

4.6.4	Mindfulness Levels	64
4.7	Procedure	65
4.8	Data Analysis	66
4.9	Ethical Consideration	67
4.10	Summary	69
<b>Chapter 5:</b>	<b>Results</b>	<b>70</b>
5.1	Introduction	70
5.2	Demographic Characteristics	70
5.3	Intervention Effects on Stress	73
5.4	Intervention Effects on Self-compassion	77
5.5	Intervention Effects on Compassion Satisfaction, Burnout, and Secondary Traumatic Stress	91
5.6	Intervention Effects on Mindfulness	97
5.7	Sustaining Effect of MSC Program after Completion of the Program	107
5.8	Power Analysis	108
5.9	Summary	108
<b>Chapter 6:</b>	<b>Discussion</b>	<b>109</b>
6.1	Introduction	109
6.2	Effect on Perceived Stress	109
6.3	Effect on Self-compassion	110
6.4	Effect on Compassion Satisfaction, Burnout, and Secondary Traumatic Stress	114
6.5	Effect on Mindfulness	116

6.6	Effect of Therapeutic Factors of Group Psychotherapy on the MSC program	120
6.7	Implications	122
6.8	Limitations	125
6.9	Recommendations for Future Research	128
6.10	Summary	128
<b>Chapter 7: Conclusion</b>		<b>130</b>
7.1	Introduction	130
7.2	Research Problems	130
7.3	Summary of Approaches and Findings	131
7.4	Implications and Recommendations	132
7.5	Summary	133
<b>References</b>		<b>134</b>
<b>List of Appendices</b>		<b>175</b>
Appendix A	Information sheet	175
Appendix B	Consent form	177
Appendix C	Demographic data collection sheet	178
Appendix D	Questionnaire: Chinese PSS	179
Appendix E	Questionnaire: SCS-C	180
Appendix F	Questionnaire: Chinese ProQOL-5	181
Appendix G	Questionnaire: FFMQ-C	182
Appendix H	Approval for the Application of Ethical Review	184

## List of Abbreviations

ACT	Acceptance and commitment therapy
AD	Associate Degree
ANOVA	Analysis of variance
APN	Advanced practice nurse
BO	Burnout
BPM	Buddhist psychological model
CAD	Coronary artery disease
CAMS-R	Cognitive and Affective Mindfulness Scale Revised
CBT	Cognitive-behavioral therapy
CF	Compassion fatigue
CFT	compassion-focused therapy
COPD	Chronic obstructive pulmonary disease
CS	Compassion satisfaction
CVA	Cerebrovascular disease
DALY	Disability adjusted life years
DBT	Dialectical behavior therapy
DM	Diabetes mellitus
EdUHK	The Education University of Hong Kong
FMI	Freiburg Mindfulness Inventory
FFMQ	Five Facet Mindfulness Questionnaires
HD	Higher Diploma
HREC	Human Research Ethics Committee
HT	Hypertension

ITT	Intention-to-treat
KIMS	Kentucky Inventory of Mindfulness Skills
<i>M</i>	Mean
MAAS	Mindfulness Attention Awareness Scale
MBCT	Mindfulness-based cognitive therapy
MBSR	Mindfulness-based stress reduction
MSC	Mindful self-compassion
NC	Nurse consultant
NCDs	Non-communicable diseases
PP	Per Protocol
ProQOL-5	Professional quality of life scale
PSS	Perceived Stress Scale
RN	Registered nurse
SCS	Self-Compassion Scale
<i>SD</i>	Standard deviation
<i>Sig</i>	Significance
SMQ	Southampton Mindfulness Questionnaire
SPSS	Statistical Package for the Social Sciences
STS	Secondary traumatic stress
WLC	Wait-list Control
WHO	World Health Organization
$\chi^2$	Chi square

## List of Figures

Figure 2.1	Buddhist psychological model of mindfulness.	32
Figure 3.1	Conceptual framework: Mindful self-compassion and compassion fatigue	44
Figure 4.1	Seating plan of the MSC program	59
Figure 5.1	CONSORT (CONsolidated Standards of Reporting Trials) flow diagram	71

## List of Tables

Table 4.1	Schedule and theme of the MSC program	59
Table 4.2	Examples of meditation techniques used in the MSC program	60
Table 4.3	Examples of informal practice used in the MSC program	60
Table 4.4	Examples of topics discussed in the MSC program	60
Table 4.5	Example of 2 <sup>nd</sup> Session outline of the MSC program	61
Table 5.1	Demographic characteristics of the INT and WLC groups	73
Table 5.2	The effect of the MSC program on the level of stress: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses	74
Table 5.3	Repeated-measures ANOVA on the effect of the MSC program on stress	76
Table 5.4	The effect of the MSC program on constructs (self-kindness and self-judgment) of self-compassion: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses	81
Table 5.5	The effect of the MSC program on constructs (common humanity and isolation) of self-compassion: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses	82
Table 5.6	The effect of the MSC program on constructs (mindfulness and over-identification) of self-compassion: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses	83
Table 5.7	The effect of the MSC program on self-compassion: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses	84
Table 5.8	Repeated-measures ANOVA on the effect of the MSC program on different constructs of self-compassion	90

Table 5.9	The effect of the MSC program on compassion satisfaction and compassion fatigue: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses	93
Table 5.10	Repeated-measures ANOVA on the effect of the MSC program on different elements of compassion satisfaction and compassion fatigue	96
Table 5.11	The effect of the MSC program on facets (observing and describing) of mindfulness: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses	100
Table 5.12	The effect of the MSC program on facets (acting with awareness and nonjudging of inner experience) of mindfulness: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses	101
Table 5.13	The effect of the MSC program on facets (nonreactivity of inner experience) and total scores of mindfulness: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses	102
Table 5.14	Repeated-measures ANOVA on the effect of the MSC program on different facets of mindfulness	106



## **Chapter 1**

### **Introduction**

#### **1.1 Background**

Nurses, whether as students or practitioners, suffered from stress in both their pre-registration training (Chan, So, & Fong, 2009; Edwards, Burnard, Bennett, & Hebden, 2010; Labrague, 2013; Reeve, Shumaker, Yearwood, Crowell, & Riley, 2013; Smith & Yang, 2017; Watson, Deary, Thompson, & Li, 2008) and their post-registration work life (Cheung & Ching, 2014). The manifestation of stress and burnout during nursing training not only reveals (Jimenez, Navia-Osorio, & Diaz, 2010; Reeve et al., 2013), but also more disturbingly indicates occupational unpreparedness and clinical incompetence (Rudman & Gustavsson, 2012), and predicts future self-harm behaviors (Cheung & Yip, 2016). Therefore, finding solutions to the problems of stress and burnout in the nursing profession is of paramount importance. This chapter introduces the background of this study, research questions, and organization of the thesis.

#### **1.2 Stress in Nursing Students**

Stress in nursing students during pre-registration training is a common global phenomenon. In one longitudinal study, it was found that the nursing students' self-reported stress was high at year 3 of the training, whereas their self-esteem was at the lowest at the end

of the training (Edwards et al., 2010). This finding is worrying since nurses, as caregivers, cannot perform their duties if they are often stressed out with low self-esteem. Moreover, stress is believed to be associated with suicide. A recent study of nursing students conducted in Greece identified that 10% and 1.4% of the respondents (N=142) reported suicidal ideation and suicidal attempts respectively (Melissa-Halikiopoulou, Tsiga, Khachatryan, & Papazisis, 2011). A similar situation was also reflected in the report of suicide or suicidal attempts in nursing students in Hong Kong (Watson et al., 2008). In Hong Kong, even though detailed statistics on suicides in the nursing profession are not available, suicides of nursing students did unfortunately appear in the news from time to time (Apple Daily, 2012, May 27; Apple Daily, 2016, March 14; Apple Daily, 2017, April 13).

Most nursing students felt a moderate level of stress according to a study (Chan et al., 2009). Undeniably, a reasonable level of stress is expected in all kinds of jobs; but if stress is at a high level, it is a different matter. According to Watson et al. (2008), higher levels of stress and burnout are usually correlated with neuroticism and difficulty in emotion-oriented coping. In another study, it was found that stress and burnout during pre-registration training were highly associated with occupational unpreparedness and clinical incompetence (Rudman & Gustavsson, 2012).

Although stress from the workplace mainly stems from the nature of the work itself, it may also be due to a whole load of other factors such as workload, working pace, working hours, decision-making responsibility, work process control, career development, recognition, organizational culture, work-life balance, and interpersonal relationships within organizations (World Health Organization [WHO], n.d.). In the nursing profession, stress mainly came from compassion fatigue, increasing workload, management demand, inter- and intra-professional conflict, lack of reward, and shift duties (McVicar, 2003).

In daily practice, helping professionals such as doctors, nurses, and social workers would experience job satisfaction after serving their clients using their professional knowledge and skills with compassion. Seeing patients fully recovered from their illness can be a rewarding experience despite all the work stress. This phenomenon, however, can reverse its course when occupational stress rises incessantly. This will not only cause job dissatisfaction and staff turnover, but also bring compassion fatigue to the helpers. Compassion fatigue, which is highly associated with empathy (Duarte & Pinto-Gouveia, 2017), shall prevail when givers of compassion are exposed to prolonged stress and hardship at work (Wentzel & Brysiewicz, 2018). As helping professionals, nurses have to face and share patients' stress and traumatic experiences frequently at work. These experiences will exhaust them and bring them compassion fatigue.

Nursing students face many stressors during their pre-registration training (Edwards et al., 2010). These stressors can be roughly divided into three categories. These are: (1) academic stressors such as heavy workload and problems from study materials and group work; (2) clinical stressors like unforeseeable situations and inexperience/incompetence in handling patients and equipment during practicum; and (3) external stressors such as interference from daily life and financial problems (Pulido-Martos, Augusto-Landa, & Lopez-Zafra, 2012; Jemenez, Navia-Osorio, & Diaz, 2010). Among the stressors, experience in clinical practicum is the most common cause of stress (Alzayyat & Al-Gamal, 2014; Bam, Oppong, & Ibitoye, 2014; Chan et al. 2009; Elliot, 2002; Gibbons, 2010; Jimenez et al., 2010; Moridi, Khaledi, & Valiee, 2014; Timmins, Corroon, Byrne, & Mooney, 2011) due to students' lack of comprehensive job knowledge and clinical skills (Chan et al., 2009).

Stress and burnout during training might induce physiological reactions such as difficulty in breathing, chest tightness, nausea and vomiting, diarrhea, dizziness and headaches, and psychological symptoms such as nervousness, depression, anxiety, fear, frustration, and anger (Jimenez et al., 2010; Shipton, 2014). In addition, stress and burnout during pre-registration training was highly correlated with future occupational unpreparedness and clinical incompetence (Rudman & Gustavsson, 2012).

### 1.3 Occupational Stress in Nurses

One key reason for high occupational stress in the Hong Kong nursing profession is due to the low nurse-to-patient ratio in hospitals. A low ratio refers to fewer nurses being assigned for a greater number of patients. This is particularly evident when compared with overseas standards. The ratio in Hong Kong has remained very low at 1:10 to 1:12 for daytime nursing shifts for many years when compared with those of other countries (Association of Hong Kong Nursing Staff, 2008, 2011, 2012, 2013, 2014). For instance, in specialty medical-surgical ward, the nurse-to-patient ratio in California was set at 1:5 (California Nurses Association, National Nurses Organizing committee, 2009; Spetz, 2004; Tevington, 2011), in Victoria at 1:4 to 1:6 (Gerdtz & Nelson, 2007; Gordon, Buchanan, & Bretherton, 2008), in New South Wales at 1:4 (New South Wales & Midwives' Association, 2016, June 28), and in England at 1:4 too (British Columbia Nurses' Union, 2011). A low nurse-to-patient ratio correlated with higher patient mortality and resulted in burnout and job dissatisfaction among nurses (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). Despite the low ratio in Hong Kong, the then Secretary for Food and Health, Dr Ko Wing Man, emphasized in the Legislative Council that the Hospital Authority would not set any rigid nurse-to-patient nor nurse-to-bed ratios for Hong Kong (Information Services Department, 2016, May 18). In other words, nurses working in the Hospital Authority are not likely to see any substantial changes in their workload in the foreseeable future.

Job dissatisfaction in nursing is not uncommon around the world. For instance, 40%, 37.7%, 36.1%, and 32.9% of the nurses in the United States, Scotland, England, and Canada reported dissatisfaction about their current job (Aiken et al., 2001). In Hong Kong, a recent study on job satisfaction showed that all of the nurse respondents, including enrolled nurses, registered nurses, specialty nurses, and nurse managers were not satisfied with their jobs. And nurses at the Registered Nurse (RN) rank, which formed the majority of nurses working in the public hospital in Hong Kong, had the least job satisfaction among all ranks of nurses (Cheung & Ching, 2014).

#### **1.4 Suicide among Nurses**

Suicide is the act of deliberately killing oneself. Hong Kong's crude suicide rate was as high as 12.8 (The Hong Kong Jockey Club Centre for Suicide Research and Prevention, 2015). When compared with Singapore, a country of similar size in terms of population and economy, the crude suicide rate there was much lower at 8.9. It is clear that the suicide rate in Hong Kong is high and action is needed. For victims aged between 25 and 34, even though the rates were on a declining trend from 14 in 2010 to 9.3 in 2014, but they were still hovering at a high level in comparison with other parts of the world.

As health promoters, nurses have an important role to play in improving the health of society, including promotion of suicide prevention and psychological wellbeing. If the psychological wellbeing of nurses is poor, how can nurses take up such an important role? In fact, it was identified in 2001 that one-third of the nurses (N=269) in Hong Kong had poor mental health (Wong et al., 2001). After over a decade, a similar result was found in a recent survey on nurses' mental health. It was observed that again around one-third of the nurses (N=850) had symptoms of depression, anxiety, and stress which was much higher than that of the general public in Hong Kong (Cheung & Yip, 2015).

Poor mental health is highly associated with self-harm behaviors like self-cutting, striking or poisoning oneself, suicidal ideation, and suicidal attempts. In Hong Kong, it was recently reported that 9.3% of the nurses had engaged in at least one form of the above behaviors (Cheung & Yip, 2016). When comparing with a survey on self-harm behaviors of adolescents in Hong Kong, of which 27% of the respondents (N=1685) admitted self-harm behaviors (Cheung, 2016, April 22), it looked as though the percentage of self-harm in nurses in fact was relatively less severe locally. However, when comparing with self-harm behaviors in adolescents in other countries, such as 6.9% (N=6020) in England (Hawton, Rodham, Evans, & Weatherall, 2002) and 8% (N=1802) in Australia (Moran et al., 2012), the self-harm behaviors of nurses in Hong Kong was really severe.

People with self-harm behaviors are highly associated with suicidal ideation and attempts in future (Hawton, Saunders, & O'Connor, 2012; Klonsky, May, & Glenn, 2013; Skegg, 2005). In one study it was reported that 14.9% and 2.9% of the nurses were identified to have suicidal ideation and suicidal attempt respectively (Cheung & Yip, 2016). In another report that focused on employment and suicide, it had been identified that the suicide rates of nurses (9.46 per 100,000) and police (9.39 per 100,000) were much higher than those in other occupations (7.24 per 100,000) in Hong Kong (The University of Hong Kong, 2012, Sep 11). At first sight, it seems that the suicide rates for the two occupations were more or less the same with only a marginal difference in percentages. Yet, if one takes into account the gender factor in these deaths, one would soon realize that this was not the case. As can be seen from literature, depression - the major risk factor causing suicide - is more common in females, suicide is in fact more prevalent in males. Police is a male-dominant occupation while nursing is one that is dominated by females. Other things being equal, the suicide rate should be higher in the police force. Therefore, if the two suicide rates are only marginally different, the suicide rate of nurses in real terms is in fact alarmingly high.

### **1.5 Stress Reduction Strategies**

In literature, the stress reduction strategies for nursing students mainly focus on 1) reducing the intensity or number of stressors such as using problem-based learning to strengthen their problem-solving skills; 2) training them to cognitively reappraise the



potential stressors through using biofeedback, yoga, or mindfulness; and 3) effectively coping with the consequence induced by stress using breathing exercise, guided imagery, or physical activity (Galbraith & Brown, 2011).

Mindfulness-based interventions such as mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy (MBCT), dialectical behavior therapy (DBT), and acceptance and commitment therapy (ACT) are some of the most popular stress reduction strategies nowadays. These interventions emphasize non-judgmental awareness of the present moment, including thoughts and body sensations.

Mindful self-compassion (MSC) is a new compassion-based intervention. By introducing techniques to cultivate mindfulness and self-compassion, learners not only learn how to reappraise stressors and experience with nonjudgmental and nonreactive awareness, they are also able to care for and soothe their bad experiences by offering compassion to themselves at the same time.

## **1.6 Problem Statement**

Compassionate nurses are needed to bring desirable patient outcomes. Nevertheless, nurses face a lot of stress at work that steals their job satisfaction and exhausts them. Stress at

work is unavoidable, but if left unattended, nurses will develop self-harshness and guilt that lead to poor wellbeing, burnout, and compassion fatigue. Nursing students are of no exception and face similar stress and consequences as they are gradually brought into the real world through clinical practicum in their curriculum. As a new compassion-based intervention, can mindful self-compassion program reduce stress level and cultivate self-compassion in nursing student?

### **1.7 Research Questions and Hypotheses**

The aim of this study was to explore the effects of an MSC program on nursing students' stress and self-compassion. The primary outcomes are the stress and self-compassion while the secondary outcomes are compassion satisfaction and mindfulness.

Therefore, the research questions attempted to answer are as follows:

- i. Is there any difference in stress level between the intervention group and the wait-list control group before and after the MSC program?
- ii. Is there any difference in the self-compassion level between the intervention group and the wait-list control group before and after the MSC program?
- iii. Is there any difference in compassion fatigue level between the intervention group and the wait-list control group before and after the MSC program?

- iv. Is there any difference in the mindfulness level between the intervention group and the wait-list control group before and after the MSC program?

To answer these questions, the following hypotheses were made:

- i. After the MSC program, the perceived stress level of intervention group is lower than that of wait-list control group.
- ii. After the MSC program, the self-compassion level of intervention group is higher than that of wait-list control group.
- iii. After the MSC program, the compassion fatigue level of intervention group is lower than that of wait-list control group.
- iv. After the MSC program, the mindfulness level of intervention group is higher than that of wait-list control group

## 1.8 Significance of the Research

This study provides an insight into the practice of mindful self-compassion on helping nursing students improve their resilience and cope with their compassion fatigue. The findings of this study also provide guidance to policy-makers in nursing education and caregivers in dealing with compassion fatigue.

## 1.9 Organization of the Thesis

There are seven chapters in the thesis. Chapter 1 provides the background and the rationale of the research. Chapter 2 presents the literature review on the stress, resilience, and compassion of nursing students and MSC program, while Chapter 3 depicts the conceptual framework used in this research and outcome measures to be studied. The study methods and results will be described in Chapter 4 and Chapter 5 respectively. Discussions on findings, implications, and recommendations will be deliberated in Chapter 6. A summary of the thesis will be presented in Chapter 7.

## Chapter 2

### Literature Review

#### 2.1 Introduction

Health is defined as “...*a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity...*” (WHO, 1946). Here, health has been defined by WHO as a concept embracing physical, mental, and social dimensions. In other words, it is not exactly correct to call someone healthy by merely focusing on that person’s physical health though this is normally how people describe others as healthy. Mental health has to be taken into account as well and it is an integral part of health. More recently, WHO defined mental health in another paper and said it consisted of two dimensions: “... *a state of wellbeing in which the individual realises his or her own abilities, can cope with the normal range of life, can work productively and fruitfully, and is able to make a contribution to his or her community...*” (WHO, 2014b). Mental health in WHO’s words is a state of wellbeing and an ability to make contributions to community; in other words, a state of mind that functions properly and productively. Thus, it can be seen that the two definitions of being healthy do not just affirm the absence of disease or infirmity in individuals, but also require the achievement of a minimum level of wellbeing by them.

This chapter will highlight the importance of healthy nurses in aspects of mental wellbeing, comorbidity of mental and physical health, impacts of stress on nursing students, and types of stress reduction strategies available.

## **2.2 Importance of Mental Well Being**

Mental wellbeing is essential to the individuals and their families. It poses a great burden on health care systems around the world. According to WHO (2012), the burden was evidenced by statistics showing that untreated mental disorders accounted for 13% of the total global burden of disease. More specifically, the burden of unipolar depressive disorder, a kind of mental health disorder, was greater in higher income (5.1%) than lower income (3.2%) countries. From another perspective, the disability adjusted life years (DALYs) of mental disorders in countries with low-income and middle-income were 25.3% and 33.5% respectively of all years lived with a disability. Another dimension that added to the seriousness of the problem was that most of these people were not treated even when they were suffering from severe mental disorders. Statistics showed that between 76% and 85% of the patients in countries with low- and middle-income were not treated, while between 35% and 50% of them were not treated in high-income countries.

Mental disorder is a risk factor for physical health; it often affects physical health and is often comorbid with other common non-communicable diseases (NCDs) (Pryor, Silva, & Melchior, 2017). NCDs also impose a heavy burden on human health globally. Common NCDs include cardiovascular diseases such as coronary artery disease (CAD) and cerebrovascular accident (CVA), respiratory diseases such as chronic obstructive pulmonary diseases (COPD), and metabolic syndromes such as hypertension (HT) and diabetes mellitus (DM) (WHO, 2015). Patients with COPD, for example, were found to have high comorbidity with depression. These COPD patients with anxiety or depression were found to have increased risk of negative outcomes (Atlantis, Fahey, Cochrane, & Smith, 2013). While people with NCDs will develop mental problems like depression and anxiety as mentioned, evidence also suggests that people with mental disorders may be likely to experience physical health problems too. More importantly, the mortality rate of people with mental health problems was 1.4 to 1.6 times higher than those with NCDs only (WHO 2012) because of disease comorbidity. This highlights the importance of mental health in health promotion planning. That is to say, physical, psychological, social, and mental health must be treated equally in health promotion as they are inter-connected and interdependent.

### 2.3 Empathy and Compassion in Nursing

Nursing is to provide bio-psycho-social-spiritual care and assistance to people of all ages, ethnicities, in various settings, and with different values (International Council of Nursing, 2012). To achieve these roles, nurses require expertise in health knowledge, proficiency in nursing skills, and also professional attributes and values. These requirements are the cornerstones of building a good professional rapport with the clients. Studies have stated that good rapport and therapeutic relationships between healthcare providers and clients can increase patients' satisfaction, adherence to treatment, and finally affect the targeted health outcome (Derksen, Bensing, & Lagro-Janssen, 2013; Duran, 2003; Leach, 2005).

Empathy is an important component in building up a good rapport and developing a helping, or therapeutic relationship with clients (Derksen et al. 2013; Reynolds & Scott, 1999; Mercer & Reynolds, 2002). Many scholars attempted to define and conceptualize empathy (MacKay, Hughes, & Carver, 1990; Morse et al., 1992; Patterson, 1974; Williams, 1990). For instance, Morse and colleagues (1992) conceptualized empathy into four components, including emotive, moral, cognitive, and behavioral empathy. In clinical settings, it was suggested that empathy is used to understand clients' feelings and attached



meanings, to communicate with clients in relation to the feelings and attached meanings, and act on that feelings and meanings in a therapeutic way (Mercer & Reynolds, 2002).

Development of empathy in nursing is necessary and important but is never an easy task. Empathy has been emphasized in nursing education and researches for many years (Brunero, Lamont, & Coates, 2009). Many scholars put effort in identifying ways and methods to assist students to develop empathy. However, the effectiveness of educational interventions was controversial. A review conducted by Brunero and colleagues (2009) found that only 11 out of the 17 studies, of which the majority were with quasi-experimental design, reported significant improvement in empathy after the educational interventions.

On the flip side, some scholars criticized that using skills-based approach to teach empathy, such as interpersonal skills or therapeutic communication skills, would lose the genuine component and relationship context (Rogers, 1975). Empathy is all about honing interpersonal skills which facilitate the building up of therapeutic relationship between nurses and their clients. In another study, Kim (2018) stated that factors influencing empathy may include self-esteem, interpersonal relationships, and self-efficacy, which are personal attributes. So, it seems that empathy education should not be just a skill-based approach but

should focus more on the cultivation of innate empathizing capacity (Williams & Stickley, 2010).

Compassion, another important attribute of nursing, is empathy in action. It is recognized as a professional value or attribute by nursing organizations in many countries such as the International Council of Nursing (2012), American Nurses Association (2015), Canadian Nurses Association (2008), and the Nursing and Midwifery Board of Australia (2008). In healthcare context, while empathy may refer to the sharing of suffering with clients, compassion not only encompasses the awareness of others' suffering, but also has a wish to alleviate others' suffering and improve others' wellbeing by caring (Raab, 2004; Singer & Klimecki, 2014). Being compassionate in caring is more than the building up of rapport by showing empathy and practicing therapeutic communication skills even though these are helpful to both healthcare providers and clients.

Compassion is emphasized in the code of ethics in nursing internationally, yet it was reported that the quality of care might not have achieved the standard of compassionate care (Lown, Rosen, & Marttila, 2011). Common interventions or strategies for promoting compassionate care in nursing mainly focus on staff training, the care model, and staff support (Blomberg, Griffiths, Wengstrom, May & Bridges, 2016). However, it was criticized

that the details of the interventions were not clearly described in most studies. Also, even though significant results were reported, some study designs were quasi-experimental in nature. To sum up, in order to improve the education on empathy and compassion, there is a need to identify strategies which are clear, explicit, standardized, and reproducible.

## 2.4 Compassion Fatigue in Nursing

What drives youngsters into the nursing profession is usually their aspiration to help the sick to recover. They can fulfill this aspiration by treating patients with compassion, empathy, and care. They can experience compassion satisfaction as part of the aspiration fulfillment. Compassion satisfaction (CS) has been defined as “...*feeling satisfied by one’s job and from the helping itself...*” (Stamm, 2010, p.21). Nevertheless, these constant emotional connections with patients’ suffering can also allow stress and patients’ traumatic experience to creep into the nurses’ own life. It is not uncommon for nurses to feel drained and exhausted when compassion fatigue sets in. Compassion fatigue is the exact opposite of compassion satisfaction. According to Figley (1995), compassion fatigue is “...*a state of tension and preoccupation with individual or cumulative trauma of clients as manifested in one or more ways...*” Compassion fatigue can manifest itself in two dimensions: secondary traumatic stress (STS) and burnout (BO). While STS is defined as “...*the natural and consequent behaviors and emotions resulting from knowing about a traumatizing event experienced by a significant other—the stress resulting from helping or wanting to help a*

*traumatized or suffering person...*” (Figley, 1995, p. 7), BO is defined as “...*feelings of unhappiness, disconnectedness, and insensitivity to the work environment...*” (Stamm, 2010, p.21). STS occurs when nurses themselves are being traumatized after caring for their patients and BO is the numbness they feel towards their care-giving responsibilities. In other words, STS and BO take away the core value of being a nurse.

Unfortunately, compassion fatigue in helping professionals is a common phenomenon (Zellmer, 2004). Studies have identified compassion fatigue in professionals such as social workers (Adams, Figley, & Boscarino, 2008; Harr & Moore, 2011), nurses (Hopper, Craig, Janvrin, Wetsel, & Reimels, 2010; Perry, Toffner, Merrick, & Dalton, 2011; Potter et al., 2010; Yoder, 2010), physicians (Nimmo & Huggard, 2013), clinical psychologists (Craig & Sprang, 2010), and psychotherapists (Figley, 2002). It is obvious that interventions are needed to help nurses cope with compassion fatigue.

In the nursing profession, ways to manage and reduce stress have been introduced in the past. However, all of them were mainly implemented at the organizational level. Concrete ideas and interventions for stress management and reduction at the individual level were rarely discussed (McVicar, 2003). For instance, in Hong Kong, in order to improve nurse retention, job promotion has been used as a way to retain staff by increasing the number of

Advanced Practice Nurse (APN). Another method used was the creation of a new post, Nurse Consultant (NC), for those APNs who wanted to follow the career path of clinical practice rather than managerial roles (Hospital Authority, 2010, May 27). Besides, special honorarium scheme was also established for paying off the overtime work of nurses (Hospital Authority, 2010, July 29). Nonetheless, these actions were only able to address the high turnover rate of experienced nurses with more than 11 years of experience. For beginner nurses, these measures did not address their turnover issue. Indeed, the actions mentioned so far have not gone into the root of the problem which requires a much deeper understanding of their state of being and in particular their mental wellbeing. There is a need to improve their inner state so that they can fulfill their roles as health promoters, health care providers, and patient advocates.

## **2.5 Mechanism of stress**

When facing a stressful situation, our brain will trigger stress cascade through two axis: sympathetic-adrenal-medullary (SAM) axis and hypothalamus-pituitary-adrenal (HPA axis) (McEwen et al., 2015). Stressful person usually presents with physiological manifestations like increase in heart rate, respiration and blood pressure. This is so-called the “fight-or-flight” response, a survival mechanism which temporarily increase the physiological capacity for people to fight against or escape from dangers. This acute stress

response is triggered through sympathetic-adrenal-medullary (SAM) axis. At the same time, central stress response will also be initiated through hypothalamus-pituitary-adrenal (HPA axis), causing stress-induced hormonal changes in the body. The following section will briefly elaborate how the stress affect our brain and body.

As a starting point, amygdala plays an important role in initiating the stress cascade. It is one of the components of limbic systems which is responsible for processing aversive information and regulating fear emotion (Ressler, 2010). When signals are received by senses like vision or hearing, other than sensory cortex, the signals would also be sent to amygdala. If the signal were perceived as stressful conditions, amygdala will transmit signal to lateral hypothalamus and parabrachial nucleus for modulating autonomic nervous system (ANS), namely sympathetic activation and parasympathetic control (Aich, Potter, & Griebel, 2009).

ANS comprised of two antagonistic arms, including sympathetic nervous system (SNS) and parasympathetic nervous system (PNS). While activation of SNS would result in acute stress response, activation of PNS would result in relaxation response. In stressful situation, SNS and PNS will be activated and suppressed respectively. Signal will be transmitted from SNS to adrenal glands, which increase the secretion of epinephrine into

bloodstream, causing physiological symptoms of acute stress response (Aich, Potter, & Griebel, 2009).

Amygdala will also transmit signal to hypothalamus for modification of stress hormone via hypothalamus-pituitary-adrenal (HPA) axis. First, paraventricular nucleus of the hypothalamus (PVN) will increase the secretion of corticotropin-releasing hormone (CRH), which stimulate the anterior pituitary gland to increase the secretion of adrenocorticotrophic hormone (ACTH) into the bloodstream. ACTH will then stimulate adrenal cortex, causing increase in production of glucocorticoid, such as cortisol, and adrenal androgens (Zankert, Bellingrath, Wust, & Kudielka, 2019). Normally, natural stress response is self-limiting. Once the stressors have gone, fight-or-flight response regulated by SAM will subside and stress hormone will decrease as well. However, under chronic stress, the body may expose to fight-or-flight response and increased stress hormones for prolonged period of time. Prolonged increase in stress hormone would alter the immune system by triggering or increasing inflammatory response in the body (Lee & Giuliani, 2019). Study has suggested that increased inflammatory activation of the immune system is associated with depression (Hodes, Kana, Menard, Merad, & RsRusso, 2015; Lee & Giuliani, 2019; Patel. 2013).

## 2.6 Mindfulness-based Interventions

How can one's mind be calmed when one is taken hostage by worries and disturbing thoughts? As a first step, one must become aware of the psychological or mental state one is in and then proceed from there. To be aware and mindful of what is happening, many techniques have been developed to cultivate this mindfulness. The most common method used is to draw attention to one's bodily sensations. People are advised to focus and anchor their minds on their feelings at the nostrils and the abdominal movements during breathing, or the feelings on the feet while they are walking and observing stimuli in a nonjudgmental way at a time when the mind becomes restless. Through repeated practice, experienced practitioners may be able to expand their awareness from internal experience, such as bodily sensations and emotions, to events and stimulus in the external environment. By developing skills in cultivating nonjudgmental awareness to emotions and feelings, people can respond to those emotions and feelings in a wiser way, rather than over-react positively and negatively with them (Kabat-Zinn, 2003).

Mindfulness has long been used by clinical psychologist to develop structured mindfulness-based interventions. Popular examples include mindfulness-based stress reduction (MBSR) (Kabat-Zinn, 1982) and mindfulness-based cognitive therapy (MBCT) (Segal, Teasdale, & Williams, 2002). MBSR is an 8-week structured program that adopts



mindfulness meditation as the major intervention to relieve chronic physical and psychological symptoms. By practicing mindfulness meditation, it is believed that the acceptance of chronic symptoms can be increased, which in turn causing subjective improvement in the symptoms. MBSR has been applied in people with various clinical conditions, for example, in people with depression, bipolar-affective disorder, generalised anxiety disorder, addictive behaviors, eating disorders, hypertension, chronic pain, and cancer with well-evidenced clinical effectiveness (Baer, 2003). For MBCT, it is a therapy modified from MBSR. The key difference between MBSR and MBCT is it merges the components of mindfulness and cognitive-behavioural therapy (CBT), which is a psychotherapy commonly used in people with psychiatric and psychological problems nowadays. MBCT is mainly applied to people with major depression (Baer, 2003).

Focusing on the present moments and nonjudgmental awareness to bodily sensation are important components of mindfulness, not only for stress reduction, but also for self-exploration and self-liberation (Shapiro, 1992). During mindfulness practice, while the attention is directed to the breathing and bodily sensations, ones may be aware of the bodily sensation due to stress, such as contracted muscles of shoulders and increase in respiratory rate. This awareness allows ones to control the breathing and relax the muscles consciously. By regular practice, ones' ability may be able to go further from stress reduction to self-

exploration and self-liberation, allowing ones to go beyond ones' egoic self (Shapiro, 1992; 蔣, 2019).

When one can go beyond oneself, one's thoughts can be controlled, avoiding rumination of the past and worry about the future (Parmentier et al., 2019). These repetitive and intrusive thoughts in fact induce unnecessary stress and psychological distress, which contributes to depression and anxiety (Alleva, 2014; Desrosiers, Vine, Klemanski, & Nolen-Hoeksema, 2013; Joormann, Dkane, & Gotlib, 2006). As a result, reactivity to the stressful conditions can be decreased, and the impact of stressful conditions can be minimized. This can help improve the stress response mechanism including SAM axis and HPA axis as mentioned earlier. Study has shown that non-judgmental awareness is evidenced by delayed and decreased amplitude upon stimuli in a study using event-related potentials, a method to assess the change of EEG wave after presenting a stimulus, reinforcing a stimulus, or withholding a stimulus to the participants (Cahn & Polich, 2006). Also, meditation has been correlated with increased power in slower frequency such as alpha power and theta power, and overall slowing in the whole brain, which reflect an increase in relaxation (Aftanas & Golosheykin, 2005; Lagopoulos et al., 2009; Lomas et al., 2015).

## 2.7 Mindfulness and Self-Compassion – Buddhist Perspective

Although studies comparing self-compassion and mindfulness and their respective effectiveness are limited, it seems that self-compassion is more powerful than mindfulness in predicting psychological wellbeing. Van Dam and colleagues (2011) tried to investigate the relationship between mindfulness, self-compassion, and several other psychological wellbeing measures. The target populations in the investigation were people with moderate to severe depression and/or anxiety. It was identified that self-compassion was a stronger predictor of wellbeing than mindfulness in these people. Baer and colleagues (2012) also identified that self-compassion has a much better ability to predict psychological wellbeing than mindfulness even though the two instruments - the self-compassion scale (SCS) and the five facet mindfulness questionnaires (FFMQ) - showed that both had significant predictive ability. In addition, Woodruff and colleagues (2014) also conducted a study to analyze the ability of self-compassion and mindfulness in predicting psychological health. In their study, it was suggested that self-compassion might have a stronger association with psychological health than mindfulness.

Both mindfulness and self-compassion in fact originate from Buddhism. The relationship between the two may be explained by Buddhist philosophy. Before discussing the relationship, some basic Buddhist philosophy will be elaborated in the following sections.

### 2.7.1 *Three Characteristics of Existence (Tilakkhana)*

The three characteristics of existence include impermanence (*anicca*), suffering (*dukkha*), and non-self (*anatta*) (Huxter, 2007). All that constitute part of our being, including physical and mental, are impermanent (*anicca*). They arise and pass away from moment to moment. Impermanence (*anicca*) means nothing can be unchanged forever. Most of them have a repeated life cycle from births, decays, and then death. Desires arising from the mind are also impermanent (Huxter, 2007). For suffering and non-self, they will be discussed next.

### 2.7.2 *Four Noble Truths (Cattari Ariyasaccani)*

Suffering in life is described and explained by the principle of causality. The four noble truths in Buddhism include suffering (*dukkha*), causes of suffering (*samudaya*), cessation of suffering (*niroda*), and path leading to the cessation of suffering (*maggā*) (Huxter, 2007). From the perspective of Buddhist philosophy, life is full of suffering. Since the world has come into existence, everything is suffering. Suffering can be physical or mental in nature. There are seven sources of suffering which includes birth, aging, illness, death, separation from what or whom you love, union with what or whom you hate, and failure to get what you desire. The cause of suffering mainly originates from ego grasping (*atma-graha*). When people have the concept of self and others, they may start to differentiate themselves from others. They will have many desires (*tanha*) in order to expand

and protect themselves. And sometimes in order to achieve certain desires, people may inevitably do harm to others and themselves (Huxter, 2007). This will trigger a vicious circle. For instance, when people feel itchy in their eyes, they may rub their eyes to ease the itchiness. At that moment, the desire is fulfilled. It seems that there is no more suffering as they feel much more comfortable after the rubbing. But actually, this may cause another suffering. The rubbing may have hurt the eyes and caused them infected, which results in painful sensation. So suffering is just like a shadow. When one's desire is fulfilled, suffering will follow.

The second truth is the causes of suffering. As long as causes or origins of suffering like cravings and desires exist, suffering will persist. When one fulfills a craving or a desire, another craving or desire will follow. It is a vicious circle that brings suffering. Only when one can avoid the causes and sources of suffering, suffering can be terminated (*niroda*), and nirvana (*nibbana*) which means realization of non-self (*anatta*) and emptiness (*Sunnata*) can be achieved. These refer to the last two truths. Non-self means there is no actual self that exists in the world. Emptiness can also mean that things are empty of unrealistic assumptions and unhelpful opinions, which means that nothing is added or taken away (Huxter, 2007).

Self is in fact a combination of five aggregates, namely, form (*rupa*), sensation (*vedana*), perception (*sanna*), mental formation (*sankhara*), and consciousness (*vinnana*). The use of the word “aggregates” is to highlight the fact that self is a combination of many phenomena including all physical and mental events. To terminate the suffering, one should follow the noble eightfold paths (*ariyo atthangiko maggo*). These include right view (*samma ditthi*), right intention (*samma sankappa*), right speech (*samma vaca*), right action (*samma kammanta*), right livelihood (*samma ajiva*), right effort (*samma vayama*), right mindfulness (*samma sati*), and right concentration (*samma samadhi*).

### 2.7.3 Four Immeasurable Minds (*Brahmavihara*)

In Buddhism, human beings can find love through practicing the “Four Immeasurable Minds”, namely, loving-kindness (*metta*), compassion (*karuna*), sympathetic joy (*mudita*), and equanimity (*upekkha*) (Rosenzweig, 2013). Loving-kindness (*metta*) is wishing others happy while compassion (*karuna*) is wishing others a relief from suffering. Sympathetic joy (*mudita*) arises when one sees others doing good while equanimity (*upekkha*) is equity and sharing with others. These minds provide people with an anchor for self and mind development. Through cultivating and nurturing the Four Immeasurable Minds, one will become caring, be able to meet the needs of the needy, letting go of prejudice and taking care of others with no discrimination. The Four Immeasurable Minds (*Brahmavihara*) are

components required in the noble eightfold paths (*ariyo aṭṭhaṅgiko maggo*). They also constitute the foundation of right intention. Right intention consists of three factors: intention of renunciation, intention of goodwill, and intention of harmlessness. To achieve the intention of harmlessness, one should have a compassionate mind and be kind to others and/or oneself in whom suffering exists.

Grabovac, Lau, and Willett (2011) have proposed a Buddhist psychological model (BPM) to explain the mechanism of mindfulness (Figure 2.1). It was explained that mindfulness practice could develop insight into the three characteristics of existence – impermanence, suffering, and non-self. For instance, when practicing sitting meditation, one will focus attention on breathing. Noting the characteristics of breathing may allow oneself to identify the difference between breaths. Usually, some thoughts may arise during meditation. One should shift the attention back to breathing and let go of the thoughts. These phenomena correspond to impermanence. After sitting for a long period of time, one will feel discomfort and may attempt to comfort oneself. This phenomenon matches with the existence of suffering and reaction to suffering. When discomfort cannot be resolved, emotions may arise. Instead, one should try to observe the discomfort and feeling with nonjudgmental awareness, rather than to react to them. The shift in perspective will allow oneself to self-liberate and go beyond egoic self (Shapiro, 1992), which in fact is the achievement of non-self.

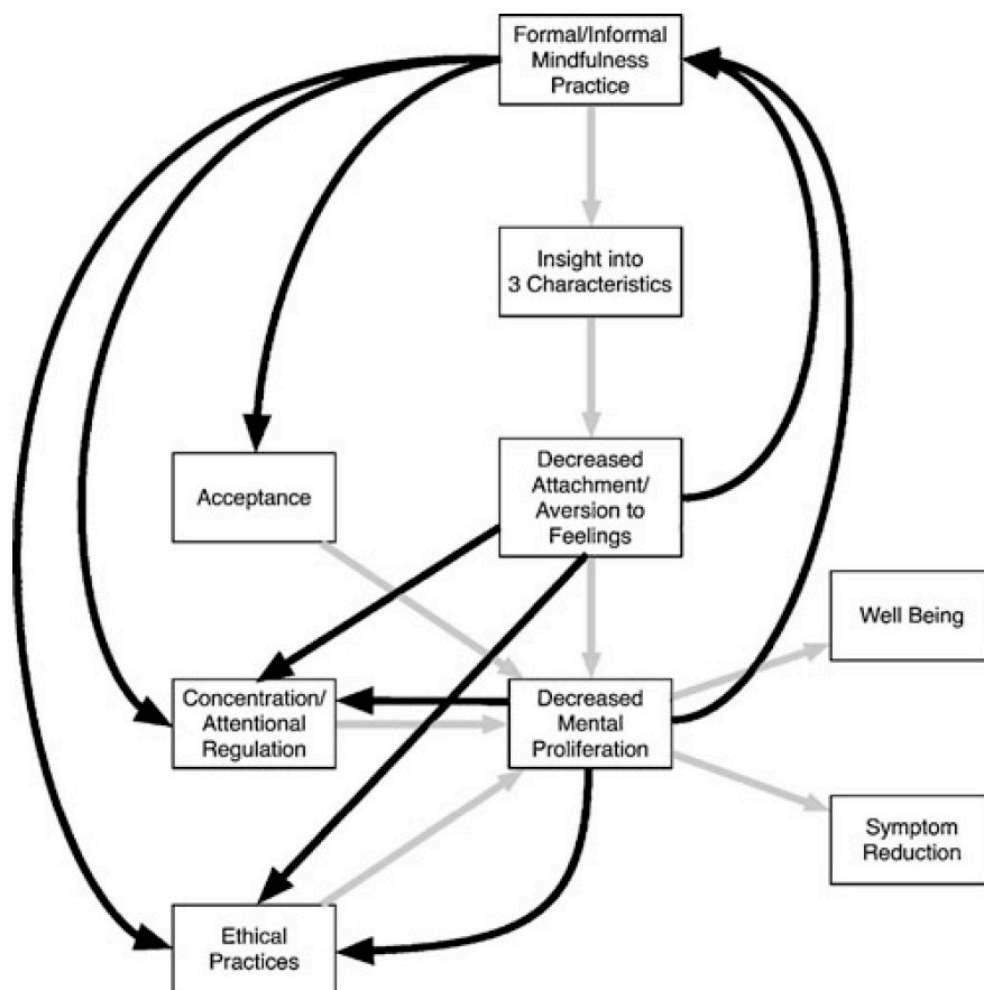


Figure 2.1 Buddhist psychological model of mindfulness.

*Note.* Grey arrow: causal relationship; Black arrow: feedback loop

The figure is adapted from "Mechanisms of mindfulness: A Buddhist psychological model" by Grabovac, A.

D., Lau, M. A., & Willett, B. R., 2011.

To sum up, mindfulness is the basic foundation of self-compassion. Mindfulness allows oneself to note one's painful thoughts and feelings and hold them in balanced awareness without over-identifying with them, avoiding from them, and comforting them



(Neff, 2003a). Self-compassion, on the other hand, focuses on caring for the experience by being kind to oneself when suffering exists, which is relatively more active in handling negative feelings. Cultivation of compassionate mind requires a large capacity and tolerance to accept the existence of suffering and imperfection of humankind. Without fundamental underpinning of mindfulness, one would easily react to events, people, or self with a judgmental and criticizing mind. Without self-compassion, one may have no active method to terminate suffering. Both mindfulness and self-compassion are also important. Kraus and Sears (2009) have described their relationship as wings of birds. Without any one of them, birds cannot fly.

## **2.8 Compassion-based interventions**

Self-compassion is linked with many positive outcomes. Clinicians and psychologists have tried to put self-compassion into applications by designing interventions and therapies with it. For instance, some studies have adopted compassion-based interventions in patients with major depressive disorder (Diedrich, Grant, Hofmann, Hiller, & Berking, 2014; Shapira & Mongrain, 2010) and in clients who required weight control (Mantzios & Wilson, 2015). Among all available compassion-based interventions, compassion-focused therapy (CFT) and mindful self-compassion (MSC) are two of the most recent, structured and popular compassion-based intervention programs.

### 2.8.1 *Compassion-focused therapy (CFT)*

Compassion focused therapy (CFT) is an intervention developed by Gilbert (2009). It is a structured training program comprising 16 sessions of 2-hour practice each (Braehler et al., 2013). Some techniques are included in the program to develop self-compassion and mindfulness such as mindful training, visualizations, compassionate cognitive responding, and engagement in self-compassionate behaviors and habits. It has been demonstrated that CFT was useful to manage patients with eating disorders, anxiety disorders, and bipolar affective disorders (Gilbert & Procter, 2006; Gilbert, 2010). It has also been used in people who were undergoing smoking cessation programs (Kelly, Zuroff, Foa, & Gilbert, 2010). The focus of CFT is to increase awareness and understanding of emotions and feelings induced by self-criticism. In this way, receivers of the therapy are more motivated to take care of their own feelings, being sensitive to their own needs and suffering, and then treat themselves with love and warmth.

Studies have shown that higher self-compassion correlated with positive psychological outcomes in different populations such as psychological wellbeing in adolescents and young adults (Bluth & Blanton, 2014; Neff & McGehee, 2010), in elderly with poorer physical health (Allen, Goldwasser, & Leary, 2012), and in elderly coping with aging process better (Allen & Leary, 2013). Moreover, increase in self-compassion showed

positive psychological outcomes in several occupations such as improved depressive symptoms in social work students (Ying, 2009), increased emotional intelligence in nurses (Heffernan, Griffin, McNulty, & Fitzpatrick, 2010), higher satisfaction in ministry and less burnout in clergy (Bernard & Curry, 2012), less academic burnout and depressive symptoms in university students (Kyeong, 2013), and better job satisfactions in white collar workers (Abaci & Arda, 2013). Higher self-compassion was also found to be associated with better symptom control in patients with schizophrenia (Eicher, Davis, & Lysaker, 2013). On the other hand, low self-compassion has been linked to poor psychological outcomes. In a study focusing on adolescent's mental health, it was found that low self-compassion was associated with emotional abuse, higher psychological distress, and higher suicidal attempts (Tanaka, Wekerle, Schmuck, Paglia-Boak, & The MAP Research Team, 2011). In a meta-analysis, it was identified that self-compassion was negatively correlated with psychopathology ( $r = -0.54, p < .0001$ ) including depression ( $r = -0.52, p < .0001$ ), anxiety ( $r = -0.51, p < .0001$ ), and stress ( $r = -0.54, p < .0001$ ) (MacBeth & Gumley, 2012).

### **2.8.2 Mindful Self-Compassion (MSC)**

Mindful self-compassion (MSC) is an intervention developed by Neff and Germer (2012). The goal of the program is to provide different formal and informal techniques that can be integrated into participants' daily living to enhance self-compassion. The structure of

the program is similar to MBSR developed by Kabat-Zinn (1982). It has a 3-hour session once a week for 8 weeks and a half-day retreat. The program covers two major concepts: mindfulness and self-compassion. Since mindfulness training is included in only one session of the MSC training, the key emphasis of the program was on self-compassion.

For the 8 sessions in the MSC program, different topics will be assigned to each of the sessions. In the first session, an introduction to self-compassion will be provided. In the second session, basic knowledge and training on mindfulness will be given. In the third session, discussion on application of self-compassion in real-life will be carried out. In the fourth session, the instructor will guide participants to develop their own compassionate inner voice. In the fifth session, the emphasis will be put on how it is important to live in accordance with one's core values. In the sixth session, techniques in regulating difficult emotions will be taught. In the seventh session, the topic will focus on how to deal with challenging interpersonal relationships. And in the last session, the instructor will discuss with participants on how to relate oneself to their own positive strengths with appreciation. For the half-day retreat, it will cover various meditations, restorative yoga, and mindful eating in silence.

Several studies using MSC have been conducted (Albertson, Neff & Dill-Shackleford, 2014; Germer & Neff, 2013; Neff & Germer, 2012; Smeets, Neff, Alberts, & Peters, 2014). Yet, limitations on their subject selection, study design and outcome measurements have been identified. For instance, Neff and Germer (2012) first conducted a pilot and randomised controlled trial of MSC in 2012. In their study, it was identified that the level of self-compassion, mindfulness, and wellbeing of the intervention group were increased significantly after receiving MSC program. Nevertheless, the study only employed self-reporting methods to measure the outcomes. Also, the participants were recruited through internet search engines and by referrals from local therapists and meditation teachers. A majority of the participants in the pilot and randomised controlled trial already had prior exposure to meditation. And most importantly, the study did not specify whether the subjects were healthy or not. In another study applying MSC in clinical practices (Germer & Neff, 2013), the researchers used a qualitative approach to evaluate the outcomes in a single subject with depression and anxiety. And because of the limited data collected, the results cannot be generalised to other people. The MSC program has also been modified and used in different subjects such as women with body dissatisfaction (Albertson et al., 2014) and female college students (Smeets et al., 2014), and significant improvements in mindfulness and self-compassion were made. Yet, these studies only involved female subjects. Also, the MSC

programs used in these two studies were too limited in scope. Their contents were difficult to be generalized and transferred to other populations.

While CFT focuses on giving kindness to others, MSC focuses on cultivating mindfulness and giving kindness to oneself. As mentioned above, nurses and nursing students are under severe stress in recent years. If they cannot handle their own stress, it would be difficult for them to learn to give their loving kindness to others or their clients. From this perspective, it would be suggested that MSC may be more appropriate in handling stress in nursing.

## **2.9 Self-Compassion and Mindfulness**

Self-compassion and compassion are closely related where self-compassion is compassion towards oneself. Neff (2003a) defined self-compassion with three major components: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification.

### **2.9.1 *Self-kindness vs. Self-judgment***

Self-kindness means to be warm, considerate, and sympathetic to oneself when one is suffering from failure, mistakes, below one's expectation, or feeling inadequate (Neff,

2003a). It is emphasised that everyone deserves love, happiness, and affection when experiencing failure in life (Bernard & Curry, 2011). One should be kind to oneself rather than being critical and judgmental as all humans are born with imperfections.

Contrary to self-kindness, self-judgment is being demanding, unsympathetic, harsh, and critical of oneself (Neff, 2003a). Self-judgment is not uncommon. Everyone would have certain expectation of oneself, and sometimes the expectation may exceed reality. Yet, most people do not notice they are self-judging. Self-criticism and being over-judgmental of self may cause rumination, which in turn causes psychological distress and depression (Brewin & Firth-Cozens, 1997; James, Verplanken, & Rimes, 2015; Marshall, Zuroff, McBride, & Bagby, 2008; Sturman & Mongrain, 2005).

### **2.9.2 *Common Humanity vs. Isolation***

Another key concept is common humanity. Humans are interconnected and every individual is only a part of the larger human community. All humans are facing imperfection and inadequacy. When facing inadequacy, however, many people tend to think that the problem is in themselves and it is isolated from other humans. They will compare with others and think that others must have solved the problem or others are in a much easier situation than themselves. When interpreting in this way, it will be difficult for people to be kind to

their selves and they will continue to be critical of themselves (Bernard & Curry, 2011; Neff 2003a; Raab, 2014).

### **2.9.3 *Mindfulness vs. Over-identification***

Mindfulness is another key concept which constitutes to mindful self-compassion.

Mindfulness encompasses non-judgemental and nonreactive awareness and attention to the present moment. The presence can further be differentiated into internal experiences, such as bodily sensations, emotions, feelings and impulses; and external stimulus, such as noise, sound and (Kabat-Zinn, 1994). Numerous scholars have been putting effort in defining and conceptualizing mindfulness or mindfulness practice respectively. For instance, Bishop and colleagues suggested that mindfulness practice should consist of two components, namely regulation of attention and orientation of experience (Bishop et al., 2004). While regulation of attention means to shift the focus on, or pay attention to, the internal experiences and external stimulus, orientation of experiences was to omit or hinder the effort in, or attempts, to elaborating of those experiences and stimulus. This explanation highlighted the first two steps in mindfulness practice, yet the focus was put on the initial targets to be achieved.

It was suggested that mindfulness can be categorized into three axioms: intention, attention, and attitude (Shapiro, Carlson, Astin, & Freedman, 2006). Intention is the initial



step. This is defined as the purpose for which people would begin to practice mindfulness.

Shaprino (1992) have deepened the illustration on mindfulness by categorizing the levels of intention can be achieved by mindfulness practice. Usually, people who participated in mindfulness practice usually aimed at improving emotion regulation at the preliminary stage.

By continuous practice, while the ability in regulating emotions have been improved, participants may start to achieve the level of self-exploration, which attempt to understand the connection between one's mind, and its attitudes, behaviors and emotions. Finally, after understanding of oneself, some of them may attempt to go beyond one's egoic self, which is named as self-liberation (Shapiro, 1992). The classification of intention is important. This is a method for practitioners to decide how to guide the practice for different participants. For the second axiom – attention, this is similar to what Bishop and colleagues (2004) have defined.

Attention is defined as the qualities with which one observes internal and external experience at present moment (Bishop et al., 2004). And the third axiom, attitude, means with what

quality the attention was brought by the practitioners (Shapiro et al., 2006). For instance,

while the first step of mindfulness practice is to pay attention to experience without

judgment, skillful practitioners can also practice mindfulness more than being

nonjudgmental, such as with acceptance, kindness and compassion.

While mindfulness was trying to pay attention, or be aware of experience of oneself, over-identification could be one of the counteractions. People who practice mindfulness should not over-identified either positive or negative feelings or experiences. Over-identification may exaggerate the impacts brought about by those positive and negative feelings or experience, which in turn violate the aim of being mindful.

## 2.10 Summary

This chapter summarized the importance of the much-neglected mental wellbeing, in particular, for caring practitioners to fulfill their professional functions. A review of the current empathy education and compassionate-focused training in nursing was discussed. It has been highlighted that despite all the efforts, compassion fatigue still remains in nursing. In view of this potential interventions using mindfulness and compassion were elaborated. The next chapter will elaborate on the researcher's proposed conceptual framework to tackle this long-standing problem of compassion fatigue and discuss the outcome measurements available to test intervention effectiveness.

## Chapter 3

### Conceptual framework

#### 3.1 Introduction

This chapter deliberates the conceptual framework that guided the development of this study. Outcome measure tools are discussed, with justifications for their use.

#### 3.2 Conceptual Framework

Neff's self-compassion (2003a) and Figley's compassion fatigue (2002) were employed as the conceptual framework of the study which is shown in Figure 3.1. There were three core components in MSC, namely, mindfulness, self-kindness, and self-compassion.

Mindfulness is to bring our minds to the here and now. Wandering mind is our default neural network. This is also called "auto-pilot mode". With wandering mind, our minds do not focus on a specific task or topic. This state of mind is dangerous when one is emotional. For instance, in a depressive state, the auto-pilot mode would keep on ruminating on issues that make one feel depressed involuntarily, for example, by finding the cause, denying the faults, and finding solutions to reverse the consequence. As rumination was found to be associated with anxiety disorder and depression (Lam, Schuck, Smith, Farmer, & Checkley, 2003; Nolen-Hoeksema, 2001; Segerstrom, Tsao, Alden, & Craske, 2000), this rumination can aggravate the depressive symptoms and in turn cause severe consequences.

As a remedy, awareness of our wandering mind is an important step to stop the autopilot mode and is a cornerstone of mindfulness practice. Once people are aware of their wandering mind, they are reminded to return to here and now by using mindfulness practice, such as anchoring their awareness onto their breathing. This kind of back and forth cycle happens all the time in daily MSC practices. The back and forth cycle is represented by the triangle at the base of the balance in the conceptual framework diagram below.

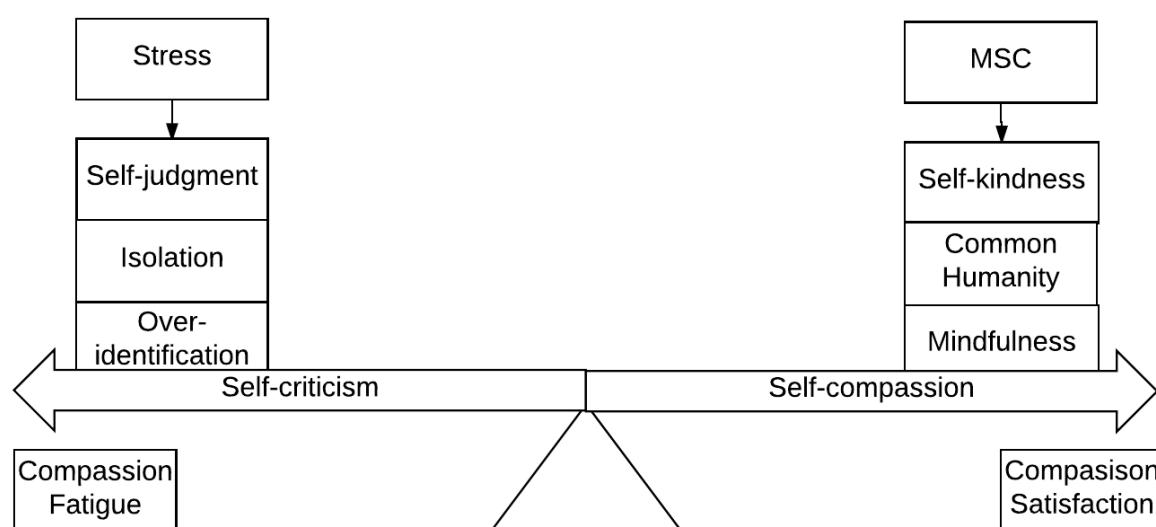


Figure 3.1. Conceptual framework: Mindful self-compassion and compassion fatigue

Self-compassion is negatively associated with self-criticism (Neff, Rude, & Kirkpatrick, 2007). They are two opposing concepts that may topple the balance of one's mind as they project outwards to opposite ends of the balance. People may have a tendency

towards self-criticism or self-compassion one way or the other during their lifetime. And for adults, they are relatively more egocentric and have a higher tendency to be self-critical (Neff, 2003a).

Besides intrinsic factors, extrinsic factors are also important in affecting the balance between self-criticism and self-compassion. Mild stress in life, with a good coping system, usually enhances performance and effectiveness. Yet, when the stress level is too high or when people do not have a good coping system, the reverse will happen and people's performance drops. In the context of nursing, extrinsic factors like increasing workload, low nurse-to-patient ratio, long hours of shift duties, or needing to be vigilant over the seriously ill, can all increase the stress in the clinical setting. If these factors are not properly attended to, they will result in poor work performance in the caring of patients. Nurses and nursing students alike may become more self-judgmental, blaming themselves for not being able to handle their work effectively and efficiently. What is worse is that they may think they are the only ones who execute nursing care poorly. The more they think in this way, the more they feel isolated and this results in a phenomenon called "an increase in sense of isolation". With over-identification of the negative feeling and blaming themselves, these extrinsic factors will intensify the severity of self-criticism. This will push the self-criticism side of

balance downwards as the negative extrinsic factors weighs in until it collapses into compassion fatigue. As matters get worse, burnout takes place.

In this study, it is hypothesized that mindful self-compassion is an effective intervention to enhance the major components of self-compassion which include self-kindness, common humanity, and mindfulness. As mentioned before, being kind to oneself is to try to soothe one's painful sensations and hard feelings. By practicing self-kindness, this can minimize the tendency of being self-judgmental and the consequences brought by it when facing stress at work. For common humanity, people are all born the same with imperfections. Feelings of being inadequate, incompetent, and vulnerable, etc. are universal among human kinds. So, understanding common humanity helps people understand that they are not alone and are not the only ones who make mistakes which helps diminish the tendency and consequences of being self-judgmental. Finally, mindfulness is the foundation of mindful self-compassion. Being mindful is to pay attention to something without any judgments. More often than not, we process facts and judge with our 'thoughts' when things happen. Depending on how our thoughts interpret the situations, emotions and behaviors will be induced which lead to our actions. If we put too much attention in identifying the meaning of a situation, this will trigger unnecessary emotions and behaviors. Being mindful is to remind oneself not to be over-interpretive and over-judgmental of a situation. By practicing

MSC, it will shift the mind's balance towards self-compassion, and hence reach a level of compassion satisfaction.

### **3.3 Outcome Measure Tools**

#### **3.3.1 *Stress***

**3.3.1.1 Chinese Perceived Stress Scale.** The Perceived Stress Scale (PSS) is a 14-item self-report instrument that measures perceived stress (Cohen, Kamarck, & Meremmelstein, 1983). It was translated into many languages including Chinese (Chu & Kao, 2005). It uses a 5-point Likert scale with scores ranging from 0 (never) to 4 (very often). The construct validity, concurrent validity, and internal consistency of the instruction have been confirmed (Leung, Lam, & Chan, 2010).

#### **3.3.2 *Self-compassion***

**3.3.2.1 The compassion scale.** The compassion scale is a 10-item tool using a 7-point Likert scale with scores ranging from “not at all true” to “very true for/of me” to measure five aspects of compassion including generosity, hospitality, objectivity, sensitivity, and tolerance (Martins, Nicholas, Shaheen, Jones, & Norris, 2013). The internal consistency was 0.82. However, principal factor analysis failed to confirm a five-factor structure.

**3.3.2.2 Self-compassion Scale-Chinese (SCS-C).** The Self-compassion scale (SCS) is a 26-item tool developed to assess the 6 constructs of self-compassion, namely, self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification (Neff, 2003b). A five-point Likert scale with scores ranging from 1 (almost never) to 5 (almost always) is used. The internal consistency of SCS was .92. The confirmatory factor analysis was performed and a 6-factor structure was confirmed with a comparative fit index of .90.

### **3.3.3 *Compassion Fatigue***

**3.3.3.1 Chinese Professional Quality of Life scale (Chinese ProQOL-5).** The Chinese ProQOL-5 is a 30-item self-report measure. It was modified from a validated tool called compassion fatigue test (Figley & Stamm, 1996). A five-point Likert scale ranging from 1 (never) to 5 (very often) was used to assess the three sub-scales - compassion satisfaction, secondary traumatic stress, and burnout. It was reported that the internal consistency for compassion satisfaction (CS), secondary traumatic stress (STS), and burnout (BO) was 0.87, 0.80, and 0.72 respectively (Stamm, 2010). Regarding validity, only divergent validity was confirmed.



### 3.3.4 *Mindfulness*

Self-report psychometric tools are standard metrics used in evaluating the effect of mindfulness. Due to the complexity of mindfulness, numerous assessment tools have been developed over the past decades. Every mindfulness measurement tool has its own focus, characteristics, and uniqueness. In the next section, six tools commonly used in assessing mindfulness will be introduced. All of them have demonstrated good psychometric properties. The tools include the Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003), Freiburg Mindfulness Inventory (FMI; Buchheld, Grossman, & Walach, 2001), Cognitive and Affective Mindfulness Scale Revised (CAMS-R; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007), Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith & Allen, 2004), Southampton Mindfulness Questionnaire (SMQ; Chadwick et al., 2008), and Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2008).

**3.3.4.1 Mindfulness Attention Awareness Scale (MAAS).** This is a tool developed by Brown and Ryan (2003) and is one of the most widely used assessment tools of mindfulness. This 15-item instrument uses a 6-point Likert scale with scores ranging from ‘almost always’ to ‘almost never’ to assess the extent of attention and awareness. Different from other assessment tools that usually focus on several aspects of mindfulness, MAAS only focuses on the attention aspect. Also, rather than describing mindful behavior in the

instrument items, the tool quotes the behavior of “mindlessness”, which is defined as the absence of mindfulness, to assess the receptive state of mindfulness. For examples, questions are worded like “I could be experiencing some emotion and not be conscious of it until some time later”, “I found it difficult to stay focused on what’s happening in the present”. The authors reported that the internal consistency of the tool was .82. The confirmatory factor analysis of a single-factor model was performed with a comparative fit index of .91. Despite its popularity, it has been criticized that the absence of mindlessness may not necessarily mean the attainment of mindfulness. Van Dam, Earleywine, and Bowers (2010) criticized that the absence of mindlessness may not reflect mindfulness, especially on items focusing on automatic pilot and automatic inattentiveness. In summary, MAAS would be useful if a short assessment tool is all that is required or if a sophisticated analysis of different facets of mindfulness is unnecessary.

**3.3.4.2 Freiburg Mindfulness Inventory (FMI).** FMI is an instrument developed based on Buddhist psychology (Buchheld et al., 2001). It has two versions, the long-form (30-item) and the short-form (14-item) (Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006). A four-point Likert scale with scores ranging from “rarely” to “almost always” is used. The authors reported a good internal consistency with Cronbach alpha of .93. A four-factor structure was extracted using principal components factor analysis. The

four factors are “attention to the present moment without personal identification with the experience at hand”, “non-judgmental, non-evaluative attitude, and response toward self and others”, “openness to one’s own negative and positive sensations, perceptions, mood states, emotions and thoughts”, and “insight into the very nature of experience as multidimensional, impermanent, and constantly changing”.

However, there are several drawbacks and considerations in using FMI. First, the four-factor structure was not stable. Leigh, Bowen, and Marlatt (2005) conducted a confirmatory factor analysis on FMI and the analysis demonstrated a three-factor structure rather than a four-factor one. Moreover, they stated that some items were repeated in other factors such as “when I notice an absence of mind, I gently return to the experience of the here and now” was found in both factor 1 and factor 3, “I experience moments of inner peace and ease, even when things get hectic and stressful” in factors 2, 1 and 3, “I accept unpleasant experiences” in factors 3 and 4, and “I avoid unpleasant feelings” in factors 3, 2, and 1. Hence, it appeared that the tool should be used as a uni-dimensional tool rather than a four-facet tool.

In addition, Belzer and colleagues (2013) criticized that FMI might not be suitable for measuring mindfulness in non-meditators. In their study, FMI short form was used and the non-meditators’ comprehension of each item was analyzed from a qualitative approach. It

was found that the non-meditators could not comprehend a number of the items (namely, 1, 2, 3, 5, 7, 8, 10, 12) as intended. One of the major reasons was that the wordings used in the items were not fully understood by people without mindfulness training and knowledge. In summary, it would be more appropriate to use FMI as a uni-dimensional tool in assessing mindfulness of experienced meditators.

**3.3.4.3 Cognitive and Affective Mindfulness Scale Revised (CAMS-R).** This is a 12-item assessment tool used to evaluate the four domains of mindfulness, namely, attention, present-focus, awareness, and acceptance / non-judgmental (Feldman et al., 2007). It was based on the cognitive and affective mindfulness scale (CAMS) developed in 2005 for evaluating the level of mindfulness in subjects with depression after receiving exposure-based cognitive therapy (Kumar, Feldman, & Hayes, 2008). The internal consistency was satisfactory with Cronbach alpha of .74 to .77. A four-factor structure was derived by using confirmatory factor analysis with comparative fit index of .95. Some scholars highlighted that the uniqueness of CAMS-R is that some items describe the ability or preparedness to be mindful, rather than the achievement of mindfulness (Bergomi, Tschacher, & Kupper, 2013) such as CAMS-R 1: “It is easy for me to concentrate on what I am doing” and CAMS-R 9: “I try to notice my thoughts without judging them”. Also, as the tool was developed to assess clients with depression, it is assumed that some preoccupied psychological distress does exist,

such as CAMS-R 2: “I am preoccupied by my future”, CAMS-R 3: “I can tolerate emotional pain”, and CAMS-R 7: “I am preoccupied by the past”. To conclude, CAMS-R is a convenient tool and is easy to use as there are only 12 items. Nonetheless, it would be more appropriate to use in subjects with preoccupied emotional distress.

**3.3.4.4 Kentucky Inventory of Mindfulness Skills (KIMS).** Baer, Smith, and Allen (2004) developed the KIMS for assessing the extent of mindfulness skills. This assessment tool comprises 39 questions. A five-point Likert scale ranging from “never or very rarely true” to “very often or always true” was used to assess four skills in mindfulness, including “observe”, “describe”, “act with awareness”, and “accept without judgment”. The authors reported good internal consistency with alpha coefficient ranging from .83 to .91. Confirmatory factor analysis confirmed a 4-factor structure with a comparative fit index of .95.

**3.3.4.5 Southampton Mindfulness Questionnaire (SMQ).** This is a 16-item tool using a 7-point Likert scale with scores ranging from ‘agree totally’ to ‘disagree totally’ to assess one’s reaction towards distressing thoughts and images (Chadwick et al., 2008). For instance, the questionnaire started with a description of a scenario: “usually when I experience distressing thoughts and images”. Its former version is called Mindfulness

Questionnaire (MQ), which was stated in an unpublished manuscript. The SMQ consists of four inter-related constructs, namely, de-centred awareness versus being lost in reacting to the distressing thoughts, allowing attention to remain with the distressing thoughts versus experiential avoidance, accepting distressing thoughts and oneself versus judging the distressing thoughts and self, and letting the distressing thoughts go without reacting versus rumination or worry. The authors reported good internal consistency with Cronbach's alpha of .89. For the construct, principal components factor analysis was conducted and a single factor structure, rather than a four-factor structure, was suggested.

**3.3.4.6 Five Facet Mindfulness Questionnaire – Chinese version (FFMQ-C).** The Five Facet Mindfulness Questionnaire (FFMQ) is a 39-item questionnaire developed by Baer and colleagues as well (2008). It uses a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true) to assess the five facets of mindfulness, including “observing”, “describing”, “acting with awareness”, “non-judging of inner experience”, and “non-reactivity to inner experience”. This five-factor model was developed based on the factor analysis of five assessment tools, including MAAS, FMI, KIMS, CAMS, and MQ. The original tool was written in English. For the English version, the authors reported that the internal consistency (Cronbach's  $\alpha$ ) ranged from .72 to .92 and the confirmatory factor analysis supported the five-factor with a comparative fit index of 0.97. FFMQ was translated

into a Chinese version – FFMQ-C (Hou, Wong, Lo, Mak, & Ma, 2013). Hou et al. (2013) reported that the internal consistency of FFMQ-C in community samples and clinical samples were .83 and .80 respectively. The five-factor structure was confirmed by confirmatory factor analysis with comparative fit indexes of .92 and .96 in community and clinical samples respectively.

### 3.4 Summary

This chapter has elaborated on the main elements of the conceptual framework. It has been suggested that the three pairs of opposing forces, for example, self-kindness as opposed to self-judgment, would each contribute to compassion satisfaction and compassion fatigue respectively. A healthy state of mind is when equilibrium is achieved by offsetting the negative forces on one-side of the balance with the positive forces on the other. Whilst negative forces like self-judgment, isolation, and over-identification causing compassion fatigue are induced by work-related stressors, these can be regulated by the cultivation of internal forces like self-kindness, an appreciation of common humanity, and mindfulness through mindful self-compassion. How mindful self-compassion can help achieve equilibrium between compassion fatigue and compassion satisfaction has been proposed and explained. Instruments available for measuring each concept have also been illustrated. In the next chapter, the research design and methods will be discussed.

## **Chapter 4**

### **Methodology**

#### **4.1 Introduction**

In this chapter, the research methodology of the current study is explained in detail, with a focus on study design, sampling, measurement tools, and data collection and analysis.

#### **4.2 Study Design**

This study employed a randomized wait-list controlled trial, in which two groups were created randomly. The first was the intervention (INT) group which would attend an 8-week MSC program as the intervention. The second was the wait-list control (WLC) group which would receive no intervention whilst the INT group was attending the MSC program. Upon completion of the MSC program by the INT group, the WLC group was then arranged to take the MSC program subsequently.

#### **4.3 Study Population and Sampling**

The study population included nursing students with degree and diploma programs in Hong Kong. They were enrolled at several education institutions, including 4 universities, 2 colleges, and 3 nursing schools of public hospitals. Subjects were recruited using convenience sampling via online social media including the Facebook and Instagram. The



subjects needed to provide their contact information online. Then the researcher contacted the subjects and explain the study to them verbally. Their eligibility was screened based on the following inclusion and exclusion criteria.

#### **4.3.1 Inclusion Criteria**

- i. The subjects had to be adults, i.e., at least 18 years of age.
- ii. They had to be the students of an RN program in Hong Kong.
- iii. They had to be able to understand Cantonese and English.
- iv. They had to have experience in clinical practicum.

#### **4.3.2 Exclusion Criteria**

- i. The subjects were diagnosed with mental problems, e.g., depression, generalized anxiety disorder.
- ii. They were diagnosed with neurological problems.
- iii. They had learnt meditation before.

#### **4.4 Randomization**

Each subject was assigned a unique subject code to protect privacy. The subject codes, on separate pieces of paper of equal size, were put into an opaque paper bag. Random

drawing of the codes for the two groups was done by an individual who had no association with this project. As a result, the subjects represented by the drawn codes were randomly allocated to the two groups.

#### **4.5 Intervention: Mindful Self-Compassion (MSC) Program**

The Mindful Self-compassion (MSC) program was used as the intervention in this study. It was delivered by a qualified and licensed MSC instructor who was experienced in mindfulness practice. The principal investigator has no role in delivery of the MSC program. The aim of the MSC program is to increase self-compassion. It consisted of eight weekly 3-hour sessions and a half-day retreat scheduled between sessions 4 and 5. Each session had a different theme focusing on a specific topic (Table 4.1). Subjects were required to achieve at least 80% of attendance in order to complete the course. They were invited to have comfortable and appropriate dress code, such as trousers and t shirt, which could facilitate them to sit on the floor conveniently.

Before the lesson began, all belongings of subjects were put aside. Mobile devices were requested to be turned off during the lesson. Usually subjects were invited to sit cross-legged or kneel on the floor facing the instructor (Figure 4.1). Several techniques and activities would be performed in the session, including meditations, informal practices and

group discussion. While meditation and informal practice were used to develop the skills in cultivating mindfulness and self-compassion, content and knowledge required in the program will be delivered through group discussion. Table 4.2, 4.3 and 4.4 showed the examples of meditation techniques, informal practice and discussion topics respectively.

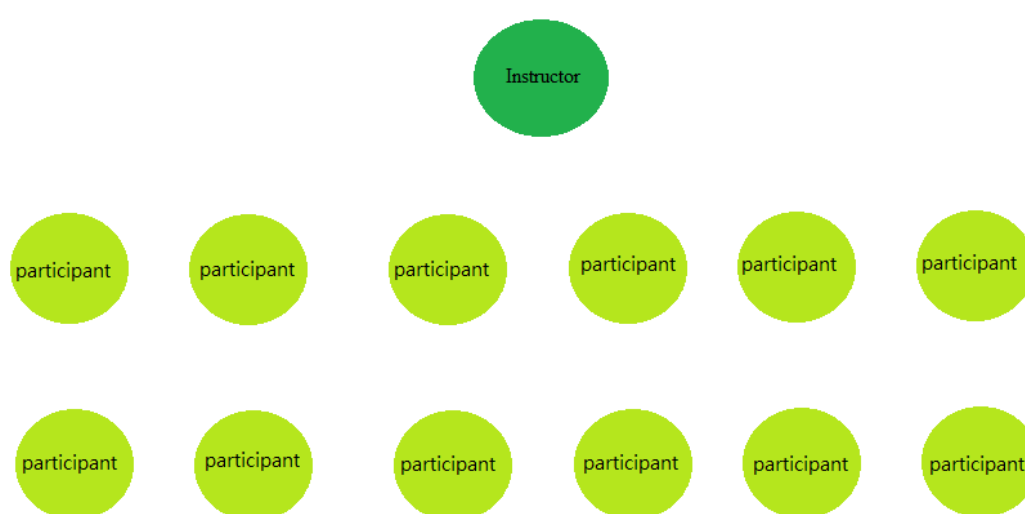


Figure 4.1  
Seating plan of the MSC program

Table 4.1  
Schedule and theme of the MSC program

Session	Theme
1	Discovering Mindful Self-Compassion
2	Practising Mindfulness
3	Practising Loving-kindness
4	Discovering Your Compassionate Voice
R	Participating in a Mini-Retreat
5	Living Deeply
6	Meeting with Difficult Emotions
7	Exploring Challenging Relationships
8	Embracing Your Life

Table 4.2

## Examples of meditation techniques used in the MSC program

- 
- Affectionate breathing
  - Compassionate body scan
  - Compassionate friend
  - Compassion for self and others
  - Giving and receiving compassion
  - Loving-kindness for a loved one
  - Loving-kindness for ourselves
- 

Table 4.3

## Examples of informal practice used in the MSC program

- 
- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| - Appreciating our good qualities | - Living with a vow               |
| - Compassion with equanimity      | - Mindfulness in daily life       |
| - Compassionate letter to myself  | - Savoring food                   |
| - Compassionate listening         | - Self-compassion break           |
| - Compassionate movement          | - Self-compassion in daily life   |
| - Compassionate walking           | - Sense and savor walk            |
| - Finding loving-kindness phrases | - Soles of the feet               |
| - Gratitude for small things      | - Soothing touch                  |
| - Here-and-now stone              | - Working with difficult emotions |
- 

Table 4.4

## Examples of topics discussed in the MSC program

- 
- |   |                                     |
|---|-------------------------------------|
| - What is self-compassion?                  | - Wandering mind                    |
| - What is mindfulness?                      | - Loving-kindness and compassion    |
| - Self-criticism and safety                 | - Finding hidden value in suffering |
| - Strategies for meeting difficult emotions | - caregiving fatigue                |
|   | - self-appreciation                 |
- 

Finally, homework exercises were an important component of the program. The aim of home exercises was to develop a new mental habit through self-practice. The subjects were required to perform meditation or informal practice at home for 30 minutes on a daily basis. Activities included in home practice usually aligned with activities done during sessions.

Table 4.5 showed an example of session outline of the second session.

Table 4.5  
Example of 2<sup>nd</sup> Session outline of the MSC program

Session 2: Practising mindfulness
<ul style="list-style-type: none"> <li>• Meditation: Affectionate breathing</li> <li>• Topic: wandering mind</li> <li>• Topic: what is mindfulness?</li> <li>• Informal practice: Soles of the feet</li> <li>• Topic: Letting go of resistance</li> <li>• Exercise: How we cause ourselves unnecessary suffering</li> <li>• Topic: Backdraft</li> <li>• Informal practice: Mindfulness in daily life</li> <li>• Informal practice: Self-compassion in daily life</li> <li>• Topic: Mindfulness and self-compassion</li> <li>• Home practice</li> </ul>

## 4.6 Outcome Measures

### 4.6.1 Stress

The Perceived Stress Scale (PSS) is a 14-item self-report instrument to measure perceived stress (Cohen et al., 1983). The Chinese version (Chinese PSS) (Chu & Kao, 2005) was used in this study to measure the extent of the stress of the participating subjects. It uses a 5-point Likert scale with scores ranging from 0 (never) to 4 (very often). The confirmatory factor analysis of a two-factor model was performed with a comparative fit index of .904. The reliability of PSS-14 were confirmed with coefficient alpha values 0.86 and 0.77 for positive and negative subscales respectively (Leung, Lam, & Chan, 2010). After converting the scores of reverse items, the scores of all questions would be summed. The higher the scores, the higher the stress level.

#### 4.6.2 *Self-Compassion Levels*

To measure the subjects' self-compassion levels, the Self-Compassion Scale (SCS) was used. It is a 26-item tool developed for assessing the 6 constructs of self-compassion, namely, self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification (Neff, 2003b) with a five-point Likert scale. A five-point Likert scale with scores ranging from 1 (almost never) to 5 (almost always) is used. The internal consistency of SCS was .92. The confirmatory factor analysis was performed and a 6-factor structure was confirmed with a comparative fit index of .90.

The original version of this tool was written in English. To be able to use it in this study, the tool had to be translated into Chinese. The tool was first translated into Chinese by the researcher. The translated version was then translated back to English by a professional translator. This translated English version was then compared with the original English version by the researcher for discrepancies. The same translation steps were then repeated on the items with discrepancies until all of the items in the backward translated English version matched those in the original English version. The final Chinese version was then adopted.

To calculate the scores, after converting the scores of reverse items, scores of each subscale were calculated separately by summing the scores of questions of each subscale. The

total scores would also be calculated by summing the scores of 6 subscales. The higher the scores, the higher the level of the subscales. There was no definite margin to differentiate whether the scores were at high level or low level.

#### **4.6.3 *Compassion Satisfaction, Burnout, and Secondary Traumatic Stress***

The Chinese ProQOL-5 is a 30-item self-report measure. It was modified from a validated tool called compassion fatigue test (Figley & Stamm, 1996). It has three subscales that cover compassion satisfaction (CS), secondary traumatic stress (STS), and burnout (BO). A five-point Likert scale ranging from 1 (never) to 5 (very often) was used to assess CS, STS and BO. It was reported that the internal consistency for compassion satisfaction (CS), secondary traumatic stress (STS), and burnout (BO) was 0.87, 0.80, and 0.72 respectively (Stamm, 2010). Regarding validity, only divergent validity was confirmed.

After converting the scores of reverse item, the scores of CS, STS and BO sub-scale would be calculated separately. For scores with score 22 or less, it will be defined as low level. Scores between 23-41 will be defined as moderate level, and scores 42 or more will be defined as high level.

#### 4.6.4 *Mindfulness Levels*

To assess the influence of mindfulness, the Five Facet Mindfulness Questionnaire (FFMQ) is suitable and was used. It is a 39-item questionnaire developed by Baer and colleagues (2008) using a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true) to assess the five facets of mindfulness: “observing”, “describing”, “acting with awareness”, “non-judging of inner experience”, and “non-reactivity to inner experience”. For the English version, the authors reported that the internal consistency (Cronbach’s  $\alpha$ ) ranged from .72 to .92 and the confirmatory factor analysis supported the five-factor with a comparative fit index of 0.97. Since the subjects were Chinese, a Chinese version - the FFMQ-C (Hou et al., 2013) was used to measure their scores in the five facets of mindfulness. Hou et al. (2013) reported that the internal consistency of FFMQ-C in community samples and clinical samples were .83 and .80 respectively. The five-factor structure was confirmed by confirmatory factor analysis with comparative fit indexes of .92 and .96 in community and clinical samples respectively.

For the scoring system, after converting the scores of reverse questions, the scores of each facet would be calculated separately by summing the scores of the questions of the facets. Total scores could also be calculated by summing the scores of 5 facets. Theoretically,



the higher scores reflect higher ability in that facets, but there is no definite margin for differentiate whether the measured facets were at high or low level.

#### **4.7 Procedure**

While the MSC program will be conducted by the licensed instructor, explanation of the project, provision of information, obtainment of informed consent, and collection of data would be performed by the principal investigator. The licensed instructor had no role in data collection. Subjects were randomized before informed consent obtained. Before data collection, an information sheet was given and explained clearly by the principal investigator. Written informed consent was then obtained. Demographic data, including the sex, age, marital status, educational level, duration of clinical practicum experience, and the institute of the participants were collected.

For the INT group, the timeline of data collection was as follows: before the start of the first session (T1) of MSC, at the 4<sup>th</sup> week (T2) which was in the middle of MSC, at the 8<sup>th</sup> week (T3) which was right after the last session of MSC, and at the 12<sup>th</sup> week (T4) which was four weeks after the completion of MSC.

For the WLC group, data were collected at T1, T2, and T3 for between-group comparisons. When MSC for the INT group ended after eight weeks, the MSC program was delivered to the WLC group for another eight weeks. Data from the WLC group were then collected at the 12<sup>th</sup> week (T4), 16<sup>th</sup> week (T5), and 20<sup>th</sup> week (T6).

#### 4.8 Data Analysis

All data were analyzed by using the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics such as frequencies, mean, and standard deviation (SD) were used to describe the demographic data, and summarize the scores of FFMQ-C, SCS-C, Chinese ProQOL-5, and Chinese PSS. For between-group comparisons, independent t-tests were used to analyze the differences in the variables between the INT group and WLC group. For within-group comparisons, repeated-measures analysis of variance (ANOVA) with post-hoc test were computed from the scores of FFMQ-C, SCS-C, Chinese ProQOL-5, and Chinese PSS of the INT group at T1, T2, and T3 and those of the WLC group at T3, T4, and T5 to examine the within subject changes before, during, and after the MSC program. Paired t-tests were conducted to assess any significant difference in the INT group between T3 and T4, and WLC group between T5 and T6. Significance level was set at  $p < 0.05$ .

Intention-to-treat (ITT) analysis was conducted, with the inclusion of the dropped out participants in the analysis. Then per protocol (PP) analysis followed, with the exclusion of the dropped out participants. Both ITT and PP results were reported.

For missing data, several commonly used methods are available. These include the complete case method, mean imputation method, last observation carried forward method, and the multiple imputation (MI). Among all of them, MI was suggested to have less bias and better coverage probability (Nakai, Chen, Nishimura, & Miyamoto, 2014). In the current study, missing data were handled by using MI. The multiple imputation model of SPSS version 25 was used. In this study the following measures were used for prediction: scores of FFMQ-C, SCS-C, Chinese ProQOL-5, and Chinese PSS at T1 (and T2 if any), and the demographic characteristics.

#### **4.9 Ethical Consideration**

All participants joined the study on a voluntary basis. Each of them was given an information sheet on the project and was provided with a detailed verbal explanation. Details about the study included the aims, objectives, procedure, duration, benefits, and possible inconvenience to the participants. When verbal agreement was obtained, the subjects were

asked to sign for consent and were informed that they could withdraw from the study at any time with no consequences.

All research data was kept strictly confidential. The hard copies of the filled questionnaires would be stored in a locked office for 5 years after the study ended, and would be destroyed at the end of the period. All collected data would be used for this study only. For personal confidentiality, contact information of the participants was linked to the research data files via codes. To avoid contamination of the results, the subjects were requested to make a commitment for not communicating with other people details like the identities of other subjects in the MSC program, and the knowledge and skills learnt in the MSC.

Before the research started, ethical approval was sought and obtained from the Human Research Ethics Committee (HREC) of the EdUHK (Ref. no. 2016-2017-0293). The reason behind was that this study used a wait-list control group of nursing students which was deemed unethical as it ignored the current needs of this group of nursing students.

A word of caution was that the MSC training might trigger the anxiety symptoms of some participants, thus causing agitation, sleepiness, sadness, or anger. However, these responses were put under control because the MSC program was delivered by a trained,

qualified, and experienced mindfulness tutor who minimized the risk by starting the practice from a low-intensity level, identifying any psychological issues of the subjects during the lessons, and giving clear instructions on mindfulness practices. Besides, both the instructor and researcher were available for additional help outside of class hours.

#### **4.10 Summary**

This chapter serves as a roadmap to this study, including the study design of the randomized controlled trial using the wait-list control group method, the randomization process for subject selection, and the outcome measures of the interventions delivered to the subjects. To complete the methodology, the data collection methods, data analysis strategies, and ethical considerations have also been clarified. The next chapter will cover the results of the study.

## **Chapter 5**

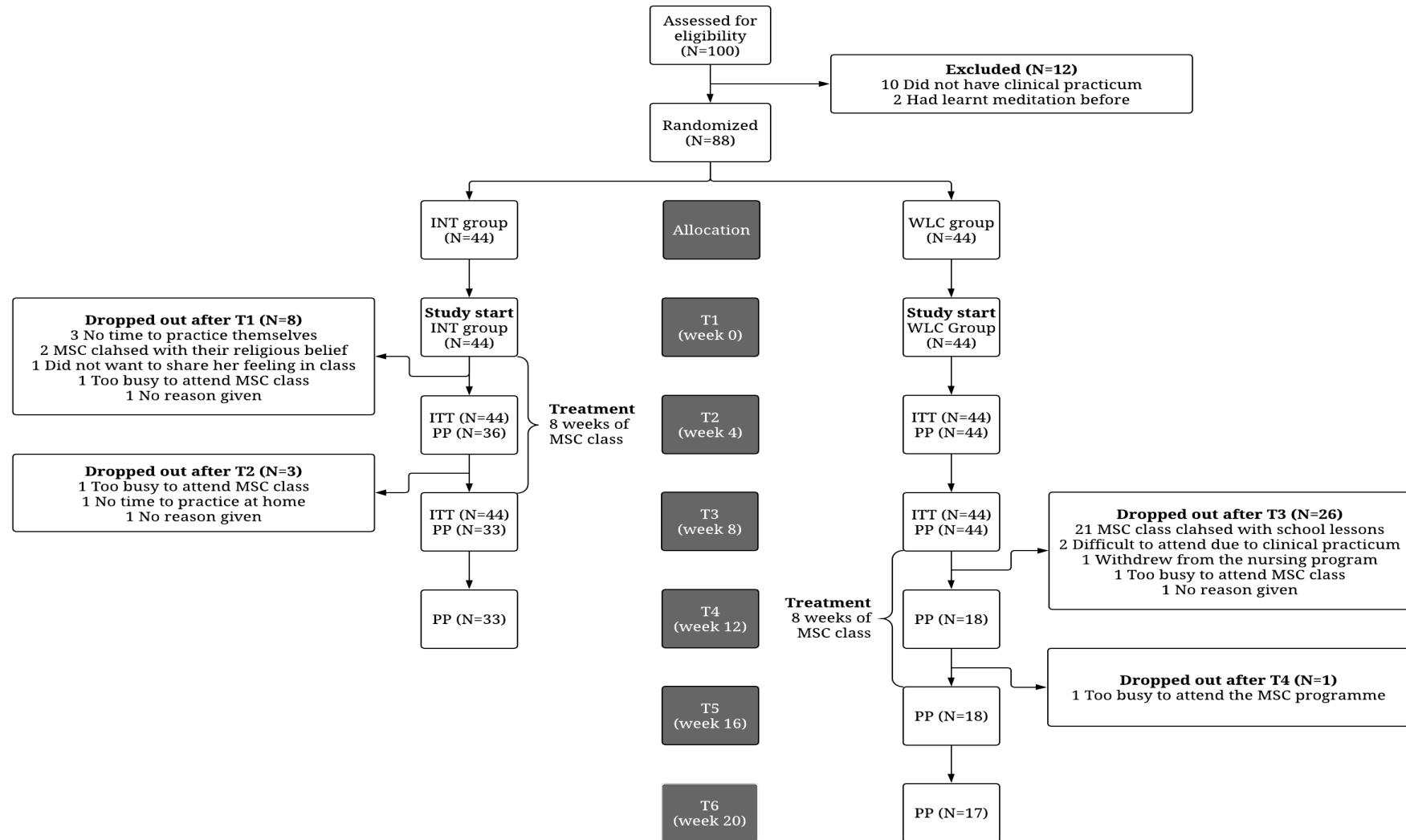
### **Results**

#### **5.1 Introduction**

In this chapter, descriptive statistics of the subjects' demographic characteristics will be presented. This is then followed by a presentation of the inferential statistical results on the dependent outcome variables as measured by the Five Facet Mindfulness Questionnaire – Chinese version (FFMQ-C), Self-Compassion Scale – Chinese version (SCS-C), Chinese Professional Quality of Life Scale (Chinese ProQOL-5), and Chinese Perceived Stress Scale (PSS).

#### **5.2 Demographic Characteristics**

Initially, 100 subjects showed interest to participate the research and applied through the internet. In the screening of eligibility, 12 of them were excluded. Eighty-eight subjects were randomized into INT group ( $n=44$ ) and WLC group ( $n=44$ ). For INT group, 8 and 3 subjects dropped out from the study after T1 and T2 respectively. For WLC group, none of them dropped out during waiting period. Three and 1 subjects dropped out from the study after T3 and T4 respectively. Figure 5.1 summarizes the workflow of the study and the reasons of attrition.



INT = intervention; WLC = Wait-list control; ITT = Intention-To-Treat; PP = Per Protocol

Figure 5.1 CONSORT (CONSolidated Standards of Reporting Trials) flow diagram



The Education University  
of Hong Kong Library

For private study or research only.  
Not for publication or further reproduction.

The demographic distribution of the intervention (INT) and the waitlist control (WLC) groups was shown in Table 5.1. A majority of the subjects (80.7%) were female. The mean ages of the INT and WLC groups were 21.05 and 21.16 respectively. On educational level, a majority of the subjects (INT: 81.82%; WLC: 86.36%) were graduated from secondary schools. Some of them had already got higher diplomas or associate degrees (INT: 15.9%; WLC: 9.09%) before pursuing the nursing program, and a few subjects even got bachelor degrees (INT: 2.27%; WLC: 4.55%). As for marital status, all of them were single. The mean years of study for both groups were similar as well, with 2.25 years and 2.59 years for the INT and WLC groups respectively. Regarding clinical practicum, the INT group had completed an average of 9.16 weeks while the WLC group 11.57 weeks. From the independent t or Chi-square tests conducted, no significant differences in demographic characteristics were found between the INT and WLC groups. Table 5.1 summarizes the descriptive statistics of the INT and WLC groups and the results of the group difference analysis of their demographic characteristics.



Table 5.1

Demographic characteristics of the INT and WLC groups (N=88)

Variable		Group		Group difference		
		INT ( <i>n</i> =44)	WLC ( <i>n</i> =44)	<i>t</i>	$\chi^2$	<i>p</i> *
Sex	Male	8	9		.073	.787
	Female	36	35			
Age ( <i>M</i> ± <i>SD</i> )		21.05 ± 1.880	21.16 ± 2.411	-.247		.806
Education level	Secondary school	36	38		1.206	.547
	HD/AD	7	4			
	Bachelor	1	2			
	Master	0	0			
Marital status	Single	44	44		n/a	
	Married	0	0			
	Divorced	0	0			
	Widower/Widow	0	0			
Years of study ( <i>M</i> ± <i>SD</i> )		2.25 ± 1.480	2.59 ± 1.352	-1.128		.263
No. of weeks in clinical practicum <i>M</i> ± <i>SD</i>		9.16 (10.347)	11.57 (13.400)	-.944		.348

*M* = Mean, *SD* = Standard deviation, *HD* = Higher diploma, *AD* = Associate degree\* The significance level was set at  $p < .05$ 

### 5.3 Intervention Effects on Stress

For between group comparisons, independent t-tests were conducted to assess any significant differences existed between the INT and WLC groups at T1, T2, and T3. As shown in Table 5.2, it was observed that the INT group had significantly lower mean scores than the WLC group at T2 and T3. At T1, there was no significant difference ( $t(86) = -.768, p = .443$ ) between the INT ( $M = 20.57, SD = 4.668$ ) and WLC ( $M = 21.41, SD = 5.567$ ) groups. At T2, the mean score of the degree of the INT group ( $M = 18.61, SD = 5.991$ ) was significantly lower ( $t(86) = -2.179, p = .032$ , Cohen's  $d =$

0.525) than that of the WLC group ( $M = 21.68$ ,  $SD = 5.705$ ). At T3, the INT group ( $M = 17.02$ ,  $SD = 5.594$ ) showed a significantly lower ( $t(86) = -2.545$ ,  $p = .014$ , Cohen's  $d = 0.631$ ) mean score than that of the WLC group ( $M = 20.52$ ,  $SD = 5.492$ ). This suggested that the intervention could improve the stress level of the INT group at 4 weeks into the MSC program.

Table 5.2

The effect of the MSC program on the level of stress: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses

Questionnaire		Chinese PSS					
Level of stress		Total					
		INT Group		WLC group			
Level	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>t</i>	<i>Sig.</i>	<i>Cohen's d</i>
ITT							
Week 0 (T1)	44	20.57 (4.668)	44	21.41 (5.567)	-.768	.443	
Week 4 (T2)	44	18.61 (5.991)	44	21.68 (5.705)	-2.179	.032*	0.525
Week 8 (T3)	44	17.02 (5.594)	44	20.52 (5.492)	-2.545	.014*	0.631
PP							
Week 0 (T1)	44	20.57 (4.668)	44	21.41 (5.567)	-.768	.445	
Week 4 (T2)	36	18.20 (5.604)	44	21.68 (5.705)	-2.716	.008*	0.615
Week 8 (T3)	33	16.55 (4.570)	44	20.52 (5.492)	-3.374	.001*	0.786

Note:

$M$  = Mean,  $SD$  = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

With regard to within group comparisons, subjects attended the MSC program were included in this analysis. This included the INT group at T1, T2, T3, and T4, and the WLC group at T3, T4, T5, and T6. Repeated-measures ANOVA was conducted to evaluate if there were any significant

differences before, during, and after the MSC program. As shown in Table 5.3, the mean scores of the level of stress decreased from T1 ( $M = 20.37$ ,  $SD = 5.095$ ) to T2 ( $M = 19.50$ ,  $SD = 5.874$ ) and then to T3 ( $M = 17.79$ ,  $SD = 4.950$ ). The Mauchly's test indicated that the sphericity could be assumed. With this assumption, it was evident that the MSC program had a significant effect ( $F(3, 150) = 3.381$ ,  $p = .020$ ) in changing the level of stress over time. Post hoc tests using Bonferroni correction revealed that the MSC program elicited a significant decrease in scores from T1 to T3 ( $p = .019$ ), but not from T1 to T2 ( $p = 1.000$ ) or T1 to T4 ( $p = 1.000$ ).

Table 5.3

Repeated-measures ANOVA on the effect of the MSC program on stress

Time	T1	T2	T3	T4	T1 vs. T2		T1 vs. T3		T1 vs. T4		T3 vs. T4		Repeated-measures ANOVA	
Level of stress	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>MD</i>	<i>Sig.</i>	<i>MD</i>	<i>Sig.</i>	<i>MD</i>	<i>Sig.</i>	<i>MD</i>	<i>Sig.</i>	<i>F(n1, n2)</i>	<i>Sig.</i>
Total	20.37 (5.095)	19.37 (5.987)	17.69 (4.769)	18.73 (5.400)	-1.000	1.000	-2.686	.019*	-1.647	.439	1.039	1.000	3.381 (3, 150)	.020*

Note:

*M* = Mean, *MD* = Mean difference, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program, T4 = 4 weeks after completion of the MSC program

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ 

The Education University  
of Hong Kong Library

For private study or research only.  
Not for publication or further reproduction.

#### 5.4 Intervention Effects on Self-compassion

Tables 5.4, 5.5, 5.6, and 5.7 provide summaries of the results of the ITT and PP analyses of the intervention effects on the six constructs of self-compassion for the INT and WLC groups.

With regard to the between-group effects, independent *t*- tests were conducted to examine whether there were any significant differences in individual constructs and total scores of all constructs of self-compassion between the INT and WLC groups at T1, T2, and T3. At T1, no significant difference was observed between the two groups. However, significant differences were observed at T2 between the two groups in the scores of the self-kindness, common-humanity, isolation, mindfulness, and over-identification constructs, and the total scores of all constructs. At T3, the scores of individual constructs and the total scores of all constructs showed significant differences between the two groups.

The mean total score of the INT group ( $M = 86.10$ ,  $SD = 9.592$ ) was significantly higher ( $t(86) = 4.053$ ,  $p = .000$ , Cohen's  $d = 0.873$ ) than that of the WLC group ( $M = 76.48$ ,  $SD = 12.279$ ) 4 weeks into the MSC program. Upon the completion of the MSC program, the mean total score of the INT group ( $M = 90.52$ ,  $SD = 9.975$ ) further increased and was

significantly higher ( $t(86) = 5.322, p = .000$ , Cohen's  $d = 1.136$ ) than that of the WLC group ( $M = 77.18, SD = 13.277$ ).

With reference to the self-kindness construct, Levene's test for equality of variances was violated at T2, so degrees of freedom were adjusted. It was then observed that the mean score of the self-kindness construct of the INT group ( $M = 16.47, SD = 2.566$ ) was significantly higher ( $t(82.828) = 2.659, p = .010$ , Cohen's  $d = 0.655$ ) than that of the WLC group ( $M = 14.66, SD = 2.949$ ). At T3, the mean score of this construct of the INT group ( $M = 17.30, SD = 3.023$ ) was significantly higher ( $t(86) = 3.680, p = .000$ , Cohen's  $d = 0.832$ ) than that of the WLC group ( $M = 14.75, SD = 3.104$ ).

For the self-judgment construct, the mean score of the INT group ( $M = 15.95, SD = 3.346$ ) was higher than that of the WLC group ( $M = 14.68, SD = 3.333$ ), although the difference was not statistically significant ( $t(86) = 1.750, p = .080$ ). At T3, the mean score of the construct of the INT group ( $M = 17.29, SD = 3.093$ ) was significantly higher ( $t(86) = 3.271, p = .001$ , Cohen's  $d = 0.724$ ) than that of the WLC group ( $M = 14.89, SD = 3.525$ ).

Regarding the common-humanity construct at T2, the INT group showed significantly higher ( $t(86) = 4.240, p = .000$ , Cohen's  $d = 0.913$ ) mean score ( $M = 14.97, SD = 1.638$ )

than that of the WLC group ( $M = 12.98$ ,  $SD = 2.610$ ). At T3, the mean score of the construct of the INT group ( $M = 15.01$ ,  $SD = 2.225$ ) was still significantly higher ( $t(86) = 3.537$ ,  $p = .000$ , Cohen's  $d = 0.809$ ) than that of the WLC group ( $M = 12.98$ ,  $SD = 2.766$ ).

Of the isolation construct, at T2 the mean score of the INT group ( $M = 13.67$ ,  $SD = 2.304$ ) was significantly higher ( $t(86) = 2.830$ ,  $p = .005$ , Cohen's  $d = 0.621$ ) than that of WLC group ( $M = 12.02$ ,  $SD = 2.969$ ). At T3, the mean score of the INT group ( $M = 14.41$ ,  $SD = 2.676$ ) further increased and was significantly higher ( $t(86) = 4.020$ ,  $p = .000$ , Cohen's  $d = 0.886$ ) than that of the WLC group ( $M = 11.91$ ,  $SD = 2.963$ ).

Similarly, the mean score of the mindfulness construct at T2 of the INT group ( $M = 13.15$ ,  $SD = 1.797$ ) was significantly higher ( $t(86) = 3.007$ ,  $p = .003$ , Cohen's  $d = 0.672$ ) than that of the WLC group ( $M = 11.75$ ,  $SD = 2.334$ ). At T3, the mean score of the construct of the INT group ( $M = 13.44$ ,  $SD = 1.907$ ) was significantly higher ( $t(86) = 3.602$ ,  $p = .000$ , Cohen's  $d = 0.789$ ) than that of the WLC group ( $M = 11.80$ ,  $SD = 2.237$ ).

Coming to the over-identification construct, the INT group ( $M = 11.90$ ,  $SD = 2.525$ ) also showed significantly higher ( $t(86) = 2.620$ ,  $p = .009$ , Cohen's  $d = 0.589$ ) mean score than that of the WLC group ( $M = 10.39$ ,  $SD = 2.599$ ) at T2. At T3, the mean score of the

construct of the INT group ( $M = 13.08$ ,  $SD = 2.492$ ) was also significantly higher ( $t(86) = 3.724$ ,  $p = .000$ , Cohen's  $d = 0.842$ ) than that of the WLC group ( $M = 10.86$ ,  $SD = 2.775$ ).



Table 5.4

The effect of the MSC program on constructs (self-kindness and self-judgment) of self-compassion: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses

Questionnaire		SCS-C												
Constructs of self-compassion	Self-kindness								Self-judgment					
	INT Group				WLC group				INT Group				WLC group	
Effect	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>t</i>	Sig.	Cohen's <i>d</i>	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>t</i>	Sig.	Cohen's <i>d</i>
ITT														
Week 0 (T1)	44	15.23 (2.495)	44	15.00 (3.042)	.383	.702		44	15.23 (3.227)	44	14.55 (3.413)	.963	.336	
Week 4 (T2)	44	16.47 (2.566)	44	14.66 (2.949)	2.659	.010*	0.655	44	15.95 (3.346)	44	14.68 (3.333)	1.750	.080	0.380
Week 8 (T3)	44	17.30 (3.023)	44	14.75 (3.104)	3.680	.000***	0.832	44	17.29 (3.093)	44	14.89 (3.525)	3.271	.001*	0.724
PP														
Week 0 (T1)	44	15.23 (2.495)	44	15.00 (3.042)	.383	.703		44	15.23 (3.227)	44	14.55 (3.413)	.963	.338	
Week 4 (T2)	36	16.80 (1.967)	44	14.66 (2.949)	3.856	.000***	0.854	36	16.23 (3.582)	44	14.68 (3.333)	1.982	.051	0.448
Week 8 (T3)	33	17.64 (2.510)	44	14.75 (3.104)	4.374	.000***	1.024	33	17.55 (3.251)	44	14.89 (3.525)	3.385	.001*	0.784

Note:

*M* = Mean, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program, T4 = 4 weeks after completion of the MSC program

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 5.5

The effect of the MSC program on constructs (common humanity and isolation) of self-compassion: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses

SCS-C														
	Common Humanity							Isolation						
	INT Group		WLC group			Sig.	Cohen's <i>d</i>	INT Group		WLC group			Sig.	Cohen's <i>d</i>
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>t</i>			<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>t</i>		
Intention to treat														
Week 0 (T1)	44	13.27 (2.255)	44	12.93 (2.714)	.641	.522		44	12.09 (2.631)	44	11.95 (3.213)	.218	.828	
Week 4 (T2)	44	14.97 (1.638)	44	12.98 (2.610)	4.240	.000***	0.913	44	13.67 (2.304)	44	12.02 (2.969)	2.830	.005**	0.621
Week 8 (T3)	44	15.01 (2.225)	44	12.98 (2.766)	3.537	.000***	0.809	44	14.41 (2.676)	44	11.91 (2.963)	4.020	.000***	0.886
Per Protocol														
Week 0 (T1)	44	13.27 (2.255)	44	12.93 (2.714)	.641	.523		44	12.09 (2.631)	44	11.95 (3.213)	.218	.828	
Week 4 (T2)	36	15.17 (1.671)	44	12.98 (2.610)	4.316	.000***	0.999	36	13.83 (2.443)	44	12.02 (2.969)	2.900	.005**	0.666
Week 8 (T3)	33	15.48 (2.138)	44	12.98 (2.766)	4.326	.000***	1.011	33	14.88 (2.747)	44	11.91 (2.963)	4.488	.000***	1.040

Note:

*MD* = Mean difference, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 5.6

The effect of the MSC program on constructs (mindfulness and over-identification) of self-compassion: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses

Questionnaire		SCS-C													
Constructs of self-compassion		Mindfulness							Over-identification						
		INT Group		WLC group		<i>t</i>	Sig.	Cohen's <i>d</i>	INT Group		WLC group		<i>t</i>	Sig.	Cohen's <i>d</i>
		<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>				<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>			
ITT															
	Week 0 (T1)	44	12.11 (2.233)	44	11.73 (2.326)	.795	.427		44	10.32 (2.648)	44	10.36 (2.720)	-.079	.937	
	Week 4 (T2)	44	13.15 (1.797)	44	11.75 (2.334)	3.007	.003**	0.672	44	11.90 (2.525)	44	10.39 (2.599)	2.620	.009**	0.589
	Week 8 (T3)	44	13.44 (1.907)	44	11.80 (2.237)	3.602	.000***	0.789	44	13.08 (2.492)	44	10.86 (2.775)	3.724	.000***	0.842
PP															
	Week 0 (T1)	44	12.11 (2.233)	44	11.73 (2.326)	.795	.429		44	10.32 (2.648)	44	10.36 (2.720)	-.079	.937	
	Week 4 (T2)	36	13.37 (1.767)	44	11.75 (2.334)	3.405	.001**	0.783	36	12.06 (2.667)	44	10.39 (2.599)	2.806	.006**	0.634
	Week 8 (T3)	33	13.76 (1.921)	44	11.80 (2.237)	4.042	.000***	0.940	33	13.39 (2.633)	44	10.86 (2.775)	4.046	.000***	0.935

Note:

*MD* = Mean difference, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program

\**p* < .05, \*\**p* < .01, \*\*\**p* < .001

Table 5.7

The effect of the MSC program on self-compassion: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses

Questionnaire			SCS-C				
Self-compassion			Total			Sig.	Cohen's <i>d</i>
Effect	INT Group		WLC group		<i>t</i>		
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>			
ITT							
Week 0 (T1)	44	78.25 (10.321)	44	76.52 (12.946)	.692	.489	
Week 4 (T2)	44	86.10 (9.592)	44	76.48 (12.279)	4.053	.000***	0.873
Week 8 (T3)	44	90.52 (9.975)	44	77.18 (13.277)	5.322	.000***	1.136
PP							
Week 0 (T1)	44	78.25 (10.321)	44	76.52 (12.946)	.692	.491	
Week 4 (T2)	36	87.46 (10.187)	44	76.48 (12.279)	4.251	.000***	0.973
Week 8 (T3)	33	92.70 (10.430)	44	77.18 (13.277)	5.562	.000***	1.300

Note:

*M* = Mean, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

With regard to within-group comparison, repeated-measures ANOVA (Table 5.8) was conducted to investigate whether there were any significant differences between T1, T2, T3, and T4 for the INT group ( $n = 33$ ) and T3, T4, T5, and T6 for the WLC group ( $n = 23$ ). It was observed that significant differences were found in the total scores and all the constructs, including self-kindness, self-judgment, humanity, isolation, mindfulness, and over-identification.

First, it was observed that the mean total score increased over time, from T1 ( $M = 79.33$ ,  $SD = 10.533$ ) to T2 ( $M = 84.37$ ,  $SD = 10.739$ ), then to T3 ( $M = 87.88$ ,  $SD = 12.465$ ), and to T4 ( $M = 88.80$ ,  $SD = 12.912$ ). The Mauchly's test identified that the assumption of sphericity was violated ( $X^2(5) = 29.510$ ,  $p = .000$ ). The degrees of freedom were adjusted using the Greenhouse-Geisser estimate of sphericity ( $\varepsilon = 0.727$ ). From the resulting analysis, the MSC program had a significant effect on increasing the mean total score ( $F(2.181, 109.031) = 15.495$ ,  $p = .000$ ). Post hoc tests using Bonferroni correction revealed that significant differences were observed from T1 to T2 ( $p = .005$ ), from T1 to T3 ( $p = .000$ ), and from T1 to T4 ( $p = .000$ ). So, it showed that the MSC program had significant effect in increasing the mean total score of all constructs of self-compassion at T2 and T3.

For the self-kindness construct, the mean scores increased over time, from T1 ( $M = 15.45$ ,  $SD = 2.548$ ) to T2 ( $M = 16.47$ ,  $SD = 2.301$ ), to T3 ( $M = 17.02$ ,  $SD = 2.753$ ), and then to T4 ( $M = 17.10$ ,  $SD = 2.587$ ). The Mauchly's test indicated that the assumption of sphericity was violated ( $X^2(5) = 23.951$ ,  $p = .000$ ), so the degrees of freedom were corrected using the Greenhouse-Geisser estimate of sphericity ( $\varepsilon = .743$ ). After the correction, the results showed that the MSC program had a significant effect on the self-kindness construct over the three time points ( $F(2.229, 111.475) = 9.205$ ,  $p = .000$ ). Post hoc tests using Bonferroni correction revealed that the MSC program elicited significant increases in the scores of self-

kindness from T1 to T2 ( $p = .027$ ), from T1 to T3 ( $p = .008$ ) [??], and from T1 to T4 ( $p = .001$ ). Therefore, it can be concluded that the MSC program elicited significant increases in the self-kindness construct 4 weeks into the course, upon the completion of the whole course and 4 weeks after the completion of the course, but no significant difference from upon the completion of the MSC program to 4 weeks after the completion.

The mean score of the self-judgment construct also increased over time, T1 ( $M = 15.31$ ,  $SD = 3.114$ ) to T2 ( $M = 15.94$ ,  $SD = 3.221$ ), then to T3 ( $M = 16.80$ ,  $SD = 3.400$ ), and to T4 ( $M = 17.08$ ,  $SD = 3.621$ ). The Mauchly's test showed that the assumption of sphericity was violated ( $X^2(5) = 25.644$ ,  $p = .000$ ); therefore, the degrees of freedom were adjusted using the Greenhouse-Geisser estimate of sphericity ( $\epsilon = 0.748$ ). After the adjustment, the MSC program had a significant effect ( $F(2.244, 112.206) = 9.147$ ,  $p = .000$ ) on increasing the scores of the self-judgment construct. Post hoc tests using Bonferroni correction showed that significant differences were observed from T1 to T3 ( $p = .004$ ), T1 to T4 ( $p = .002$ ), but not from T1 to T2 ( $p = 1.000$ ). This implies that the MSC program could significantly improve the mean score of self-judgment upon the completion of the MSC program.

Regarding the humanity construct, the mean score increased from T1 ( $M = 13.24$ ,  $SD = 2.250$ ) to T2 ( $M = 14.45$ ,  $SD = 2.194$ ), to T3 ( $M = 14.59$ ,  $SD = 2.594$ ), and then to T4 ( $M =$

14.90,  $SD = 2.343$ ). The Mauchly's test showed that the assumption of sphericity could be assumed. From the analysis under the assumption, the MSC program had a significant effect ( $F(3, 150) = 8.229, p = .000$ ) on increasing the scores of the self-judgment construct. Post hoc tests using Bonferroni correction showed that significant differences were observed from T1 to T2 ( $p = .001$ ), T1 to T3 ( $p = .008$ ), and T1 to T4 ( $p = .001$ ). This reflected that the MSC program could significantly improve the mean score of the humanity construct since 4 weeks into the MSC program.

The isolation construct also increased over time from T1 ( $M = 12.37, SD = 2.757$ ) to T2 ( $M = 13.14, SD = 2.623$ ), then to T3 ( $M = 13.88, SD = 2.923$ ), and slightly decreased when reaching T4 ( $M = 13.78, SD = 3.087$ ). The Mauchly's test identified that the assumption of sphericity had been violated ( $X^2(5) = 17.815, p = .003$ ). The Greenhouse-Geisser estimate of sphericity was larger than 0.75; therefore, the degrees of freedom were adjusted using the Huynh-Feldt estimate of sphericity ( $\epsilon = 0.853$ ). After the adjustment, the MSC program had a significant effect ( $F(2.558, 127.914) = 6.089, p = .001$ ) on increasing the scores of the isolation construct. Post hoc tests using Bonferroni correction showed that significant differences were observed from T1 to T3 ( $p = .010$ ) and T1 to T4 ( $p = .031$ ), but not from T1 to T2 ( $p = .526$ ). It was evident that the MSC program could significantly improve the mean score of the isolation construct upon the completion of the MSC program.

The mean score of the mindfulness construct increased over time, from T1 ( $M = 12.16$ ,  $SD = 2.275$ ) to T2 ( $M = 12.98$ ,  $SD = 2.054$ ), to T3 ( $M = 13.20$ ,  $SD = 2.088$ ), and then to T4 ( $M = 13.82$ ,  $SD = 2.123$ ). The Mauchly's test identified that the assumption of sphericity was violated ( $X^2(5) = 24.356$ ,  $p = .000$ ). The degrees of freedom were adjusted using the Greenhouse-Geisser estimate of sphericity ( $\epsilon = 0.736$ ). After the adjustment, the MSC program showed a significant effect ( $F(2.207, 110.336) = 12.146$ ,  $p = .000$ ) on increasing the scores of the mindfulness construct. Post hoc tests using Bonferroni correction showed that significant differences were observed from T1 to T2 ( $p = .025$ ), T1 to T3 ( $p = .029$ ), and T1 to T4 ( $p = .000$ ). It was obvious that the MSC program could significantly improve the mean score of the mindfulness construct 4 weeks into the MSC program.

The over-identification construct mostly increased over time and then tailed off at the end of the course. The scores increased from T1 ( $M = 10.80$ ,  $SD = 2.514$ ) to T2 ( $M = 11.39$ ,  $SD = 2.631$ ), and then to T3 ( $M = 12.39$ ,  $SD = 2.850$ ), but slightly decreased to T4 ( $M = 12.12$ ,  $SD = 4.881$ ). The Mauchly's test identified that the sphericity was violated. The degrees of freedom were corrected based on the Greenhouse-Geisser estimate of sphericity ( $\epsilon = 0.589$ ). After the correction, the MSC program showed a significant effect ( $F(1.767, 88.338) = 3.305$ ,  $p = .047$ ) on increasing the scores of the over-identification construct. Post hoc tests using Bonferroni correction showed that significant differences were observed from



T1 to T3 ( $p = .001$ ), but not T1 to T2 ( $p = .676$ ) nor T1 to T4 ( $p = .478$ ). It was evident that the MSC program could only improve the mean score of the over-identification construct upon the completion of the MSC program.

Table 5.8

Repeated-measures ANOVA on the effect of the MSC program on different constructs of self-compassion

Time	T1	T2	T3	T4	T1 vs. T2		T1 vs. T3		T1 vs. T4		T3 vs. T4		Repeated-measures ANOVA	
Constructs of self-compassion	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>MD</i>	Sig.	<i>MD</i>	Sig.	<i>MD</i>	Sig.	<i>MD</i>	Sig.	<i>F(n1, n2)</i>	Sig.
Self-kindness	15.45 (2.548)	16.47 (2.301)	17.02 (2.753)	17.10 (2.587)	1.020	.027*	1.569	.008**	1.647	.001**	.078	1.000	9.205 (2.229, 111.475)	.000***
Self-judgment	15.31 (3.114)	15.94 (3.221)	16.80 (3.400)	17.08 (3.621)	.627	1.000	1.490	.004**	1.765	.002**	.275	1.000	9.147 (2.244, 112.206)	.000***
Humanity	13.24 (2.250)	14.45 (2.194)	14.59 (2.594)	14.90 (2.343)	1.216	.001**	1.353	.008**	1.667	.001**	.314	1.000	8.229 (3, 150)	.000***
Isolation	12.37 (2.757)	13.14 (2.623)	13.88 (2.923)	13.78 (3.087)	.765	.526	1.510	.010*	1.412	.031*	-.098	1.000	6.089 (2.558, 127.914)	.001**
Mindfulness	12.16 (2.275)	12.98 (2.054)	13.20 (2.088)	13.82 (2.123)	.824	.025*	1.039	.029*	1.667	.000***	.627	.043*	12.146 (2.207, 110.336)	.000***
Over-identification	10.80 (2.514)	11.39 (2.631)	12.39 (2.850)	12.12 (4.881)	.588	.676	1.588	.001**	1.314	.478	-.275	1.000	3.305 (1.767, 88.338)	.047*
Total	79.33 (10.533)	84.37 (10.739)	87.88 (12.465)	88.80 (12.912)	5.039	.005**	8.549	.000***	9.471	.000***	.922	1.000	15.495 (2.181, 109.031)	.000***

Note:

*M* = Mean, *MD* = Mean difference, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program, T4 = 4 weeks after completion of the MSC program

\**p* < .05, \*\**p* < .01, \*\*\**p* < .001

## 5.5 Intervention Effects on Compassion Satisfaction, Burnout, and Secondary

### Traumatic Stress

Independent t-tests were conducted to examine the effect of the MSC program on compassion fatigue between the INT and WLC groups at T1, T2, and T3. Compassion fatigue consisted of three elements, namely, compassion satisfaction (CS), burnout (BO), and secondary traumatic stress (STS). As shown in Table 5.9, no significant differences were observed between the INT and WLC groups before the MSC program (T1) and at 4 weeks into the MSC program (T2). Significant differences were identified only after the completion of the MSC program in the CS and BO elements.

For the CS element, at T2 the mean score of the INT group ( $M = 38.39$ ,  $SD = 4.341$ ) was higher than that of the WLC group ( $M = 36.00$ ,  $SD = 4.700$ ), but no significant difference ( $t(86) = 1.910$ ,  $p = .057$ , Cohen's  $d = 0.433$ ) was observed. Upon the completion of the MSC program (T3), the INT group ( $M = 38.86$ ,  $SD = 5.854$ ) showed a significantly higher ( $t(86) = 2.334$ ,  $p = 0.021$ , Cohen's  $d = 0.551$ ) mean score than that of the WLC group ( $M = 35.84$ ,  $SD = 5.090$ ). This showed that the MSC program had a significant effect on improving the level of the CS element upon the completion of the MSC program.

For the BO element, the mean score of the INT group ( $M = 21.90$ ,  $SD = 4.184$ ) was lower than that of the WLC group ( $M = 23.30$ ,  $SD = 4.327$ ) after 4 weeks into the MSC program, but no significant difference ( $t(86) = -1.505$ ,  $p = .132$ ) was observed. Upon the completion of the MSC program, the mean score of the INT group was significantly lower ( $t(86) = -2.919$ ,  $p = .005$ , Cohen's  $d = 0.719$ ) than that of the WLC group. It was observed that the MSC program had a significant effect on decreasing the mean score of the BO element upon the completion of the MSC program.

For the STS element, although the mean score of the INT group ( $M = 23.47$ ,  $SD = 4.190$ ) was higher than that of the WLC group ( $M = 22.89$ ,  $SD = 5.678$ ), no significant difference ( $t(86) = .493$ ,  $p = .623$ ) was observed. Even after the completion of the MSC program, the INT group ( $M = 23.43$ ,  $SD = 4.890$ ) was only slightly and insignificantly lower ( $t(86) = .259$ ,  $p = .797$ ) than that of the WLC group ( $M = 23.09$ ,  $SD = 5.582$ ). It seems that the MSC program did not have any significant effects on changing the mean scores of the STS element.

Table 5.9

The effect of the MSC program on compassion satisfaction and compassion fatigue: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses

Questionnaire		Chinese ProQOL-5																				
Compassion fatigue		Compassion Satisfaction							Burnout							Secondary Traumatic Stress						
		INT Group		WLC group		<i>t</i>	Sig.	Cohen's <i>d</i>	INT Group		WLC group		<i>t</i>	Sig.	Cohen's <i>d</i>	INT Group		WLC group		<i>t</i>	Sig.	Cohen's <i>d</i>
Level		<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>				<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>				<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>			
ITT																						
	Week 0 (T1)	44	38.39 (4.341)	44	37.50 (4.752)	.913	.361		44	22.32 (4.079)	44	23.16 (3.685)	-1.015	.310		44	24.39 (4.726)	44	23.91 (4.051)	.509	.611	
	Week 4 (T2)	44	38.00 (4.542)	44	36.00 (4.700)	1.910	.057	0.433	44	21.90 (4.184)	44	23.30 (4.327)	-1.505	.132	0.329	44	23.47 (4.190)	44	22.89 (5.678)	.493	.623	0.116
	Week 8 (T3)	44	38.86 (5.854)	44	35.84 (5.090)	2.334	.021*	0.551	44	20.02 (4.284)	44	23.07 (4.201)	-2.919	.005*	0.719	44	23.43 (4.890)	44	23.09 (5.582)	.259	.797	0.065
PP																						
	Week 0 (T1)	44	38.39 (4.341)	44	37.50 (4.752)	.913	.364		44	22.32 (4.079)	44	23.16 (3.685)	-1.015	.313		44	24.39 (4.726)	44	23.91 (4.051)	.509	.612	
	Week 4 (T2)	36	37.94 (4.419)	44	36.00 (4.700)	1.874	.065	0.425	36	21.91 (4.010)	44	23.30 (4.327)	-1.455	.150	0.333	36	23.54 (3.898)	44	22.89 (5.678)	.583	.562	0.133
	Week 8 (T3)	33	38.39 (5.841)	44	35.84 (5.090)	2.044	.044*	0.465	33	19.94 (4.235)	44	23.07 (4.201)	-3.223	.002*	0.742	33	23.09 (4.362)	44	23.09 (5.582)	.000	1.000	0

Note:

*M* = Mean, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program

\**p* < .05, \*\**p* < .01, \*\*\**p* < .001

For within group comparisons, repeated-measures ANOVA was conducted to evaluate any significant changes over time in each of the element of compassion fatigue due to the intervention. As before, the analysis included T1, T2, T3, and T4 of the INT group, and T3, T4, T5, and T6 of the WLC group. As shown in Table 5.10, for the CS element, the mean scores of the element at T1 ( $M = 37.76$ ,  $SD = 4.905$ ), T2 ( $M = 37.12$ ,  $SD = 4.857$ ), T3 ( $M = 37.57$ ,  $SD = 5.661$ ), and T4 ( $M = 37.82$ ,  $SD = 5.399$ ) were close. The Mauchly's test indicated that the sphericity could be assumed. In sum, the results showed that the MSC program did not significantly change ( $F(3, 150) = .712$ ,  $p = .546$ ) the mean scores of the compassion satisfaction element over time.

Regarding the BO element, the mean scores of the element decreased gradually from T1 ( $M = 22.78$ ,  $SD = 4.149$ ) to T2 ( $M = 22.41$ ,  $SD = 4.148$ ), to T3 ( $M = 21.04$ ,  $SD = 4.336$ ), and then to T4 ( $M = 20.61$ ,  $SD = 4.446$ ). The Mauchly's test indicated that the sphericity could be assumed. Repeated-measures ANOVA showed that the MSC program could significantly decrease ( $F(3, 150) = 9.290$ ,  $p = .000$ ) the mean scores of the BO element over time. Post hoc tests using Bonferroni correction revealed that the MSC program elicited a significant increase in the mean scores from T1 to T3 ( $p = .020$ ) and T1 to T4 ( $p = .002$ ), but not T1 to T2 ( $p = 1.000$ ). This indicated that the MSC program could significantly improve the means scores of the BO element upon completion of the MSC program.

For the STS element, the mean scores decreased gradually from T1 ( $M = 24.16$ ,  $SD = 4.429$ ) to T2 ( $M = 23.49$ ,  $SD = 4.168$ ), to T3 ( $M = 23.31$ ,  $SD = 4.352$ ), and then to T4 ( $M = 23.14$ ,  $SD = 3.909$ ). However, Repeated-measures ANOVA did not show any significant difference ( $F(3, 150) = 1.429$ ,  $p = .237$ ) over the three time points.

Table 5.10

Repeated-measures ANOVA on the effect of the MSC program on different elements of compassion satisfaction and compassion fatigue

Time	T1	T2	T3	T4	T1 vs. T2		T1 vs. T3		T1 vs. T4		T3 vs. T4		Repeated-measures ANOVA	
Elements of compassion fatigue	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>MD</i>	<i>Sig.</i>	<i>MD</i>	<i>Sig.</i>	<i>MD</i>	<i>Sig.</i>	<i>MD</i>	<i>Sig.</i>	<i>F(n<sub>1</sub>, n<sub>2</sub>)</i>	<i>Sig.</i>
Compassion satisfaction	37.76 (4.905)	37.12 (4.857)	37.57 (5.661)	37.82 (5.399)	-.647	1.000	-.196	1.000	.059	1.000	.255	1.000	.712 (3, 150)	.546
Burnout	22.78 (4.149)	22.41 (4.148)	21.04 (4.336)	20.61 (4.446)	-.373	1.000	-1.745	.020*	-2.176	.002**	-.431	1.000	9.290 (3, 150)	.000***
Secondary traumatic stress	24.16 (4.429)	23.49 (4.168)	23.31 (4.352)	23.14 (3.909)	-.667	1.000	-.843	.783	-1.020	.370	-.176	1.000	1.429 (3, 150)	.237

Note:

*M* = Mean, *MD* = Mean difference, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program, T4 = 4 weeks after completion of the MSC program

\**p* < .05, \*\**p* < .01, \*\*\**p* < .001

The Education University  
of Hong Kong Library

For private study or research only.  
Not for publication or further reproduction.



## 5.6 Intervention Effects on Mindfulness

ITT and PP analyses of the scores obtained from the FFMQ-C questionnaire and the results of the independent t-tests on the five facets of mindfulness are summarized in Table 5.11, Table 5.12, and Table 5.13.

Between-group independent t-tests were performed to determine if there were any significant differences in each of the five facets of mindfulness and their total scores between the INT and WLC groups at T1 (before the MSC program), T2 (4 weeks into the MSC program) and T3 (upon the completion of the MSC program). Based on the analysis, all variables in the FFMQ-C questionnaire did not violate the Levene's test for equality of variances ( $p < .05$ ) between the INT and WLC groups. No significant differences were found in the mean scores of all facets of mindfulness and their mean total scores at T1 (before the MSC program) between the INT and WLC groups. However, at T2 (4 weeks into the MSC program), significant differences between the groups were found in the mean scores of the observing and nonreactivity-of-inner-experience facets, and their mean total scores. Also at T3 (upon the completion of the MSC program), significant differences between the two groups were found in the mean scores of the observing, acting-with-awareness, nonjudging-of-inner-experience, and nonreactivity-of-inner-experience facets, and their mean total scores.

From the analysis of the total scores, it was observed that at T2, the mean total score of the INT group ( $M = 127.61$ ,  $SD = 10.314$ ) was significantly higher ( $t(86) = 3.708$ ,  $p = .000$ , Cohen's  $d = 0.743$ ) than that of the WLC group ( $M = 119.11$ ,  $SD = 11.086$ ). At T3, a significant difference ( $t(86) = 5.023$ ,  $p = .000$ , Cohen's  $d = 1.079$ ) was also observed where the mean total score of the INT group ( $M = 131.87$ ,  $SD = 11.140$ ) was significantly higher than that of the WLC group ( $M = 119.11$ ,  $SD = 12.475$ ). It was evident that the MSC program had a significant effect on increasing the mean total score 4 weeks into the intervention and upon the completion of the whole MSC program.

For the observing facet of mindfulness, the mean score at T2 was significantly higher ( $t(86) = 3.332$ ,  $p = .001$ , Cohen's  $d = 0.742$ ) for the INT group ( $M = 27.20$ ,  $SD = 4.26$ ) than that of the WLC group ( $M = 23.80$ ,  $SD = 4.733$ ). The mean score of the same facet at T3 was also significantly higher ( $t(86) = 4.247$ ,  $p = .000$ , Cohen's  $d = 0.989$ ) for the INT group ( $M = 28.17$ ,  $SD = 4.498$ ). As for the acting-with-awareness facet, the mean score at T3 of the INT group ( $M = 28.23$ ,  $SD = 3.902$ ) was significantly higher ( $t(86) = 3.039$ ,  $p = .002$ , Cohen's  $d = 0.884$ ) than that of the WLC group ( $M = 25.14$ ,  $SD = 5.351$ ). Similarly at T3, the mean score of the nonjudging-of-inner-experience facet of the INT group ( $M = 25.45$ ,  $SD = 4.169$ ) was significantly higher ( $t(86) = 1.985$ ,  $p = .047$ , Cohen's  $d = 0.432$ ) than that of the WLC group

( $M = 23.52$ ,  $SD = 4.757$ ). From the above, it was observed that the MSC program did significantly increase the mean score of the observing facet 4 weeks into the intervention and also upon completion of the whole MSC program.

Concerning the nonreactivity-of-inner-experience facet, at T2 the INT group ( $M = 22.06$ ,  $SD = 2.810$ ) showed significantly higher ( $t(86) = 2.679$ ,  $p = .008$ , Cohen's  $d = 0.602$ ) mean score than that of the WLC group ( $M = 20.18$ ,  $SD = 3.405$ ). At T3, a significant difference ( $t(86) = 3.047$ ,  $p = .002$ , Cohen's  $d = 0.674$ ) was also observed between the INT group ( $M = 22.61$ ,  $SD = 2.514$ ) and the WLC group ( $M = 20.45$ ,  $SD = 3.769$ ). It was observed that the mean score of nonreactivity-of-inner-experience facet significantly increased 4 weeks into the intervention and also upon completion of the whole MSC program.

Among all facets of mindfulness, only the describing facet did not show any significant differences between the INT and WLC groups at both T2 and T3. The mean score at T2 of the INT group ( $M = 27.27$ ,  $SD = 3.580$ ) was insignificantly ( $t(86) = 1.191$ ,  $p = .234$ ) higher than that of WLC group ( $M = 26.27$ ,  $SD = 4.117$ ). A similar pattern was also observed at T3, where the mean score of the INT group ( $M = 27.42$ ,  $SD = 3.591$ ) was higher than that of the WLC group ( $M = 26.32$ ,  $SD = 4.624$ ), but with no significant difference ( $t(86) = 1.248$ ,  $p = .212$ ).

Table 5.11

The effect of the MSC program on facets (observing and describing) of mindfulness: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses

Questionnaire		FFMQ-C														
Facets of mindfulness	Observing								Describing							
	INT Group				WLC group				INT Group				WLC group			Cohen's <i>d</i>
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>t</i>	Sig.	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>t</i>	Sig.				
Effect																
ITT																
Week 0 (T1)	44	24.55 (4.433)	44	23.73 (4.105)	.898	.369		44	24.77 (4.164)	44	25.70 (4.718)	-.982	.326			
Week 4 (T2)	44	27.20 (4.426)	44	23.80 (4.733)	3.332	.001**	0.742	44	27.27 (3.580)	44	26.27 (4.117)	1.191	.234	0.259		
Week 8 (T3)	44	28.17 (4.498)	44	23.68 (4.579)	4.247	.000***	0.989	44	27.42 (3.591)	44	26.32 (4.624)	1.248	.212	0.266		
PP																
Week 0 (T1)	44	24.55 (4.433)	44	23.73 (4.105)	.898	.372		44	24.77 (4.164)	44	25.70 (4.718)	-.982	.329			
Week 4 (T2)	36	27.69 (4.020)	44	23.80 (4.733)	3.875	.000***	0.886	36	27.37 (3.904)	44	26.27 (4.117)	1.205	.232	0.274		
Week 8 (T3)	33	29.06 (3.391)	44	23.68 (4.579)	5.677	.000***	1.335	33	27.64 (3.959)	44	26.32 (4.624)	1.315	.193	0.307		

Note:

*M* = Mean, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 5.12  
The effect of the MSC program on facets (acting with awareness and nonjudging of inner experience) of mindfulness: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses

Questionnaire		FFMQ-C												
Facets of mindfulness	Acting with Awareness								Nonjudging of inner experience					
	INT Group		WLC group		<i>t</i>	Sig.	Cohen's <i>d</i>	INT Group		WLC group		<i>t</i>	Sig.	Cohen's <i>d</i>
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>				<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>			
ITT														
Week 0 (T1)	44	26.05 (5.044)	44	25.52 (5.551)	.462	.644		44	23.43 (4.673)	44	23.73 (4.672)	-.297	.767	
Week 4 (T2)	44	26.51 (4.090)	44	25.39 (5.226)	1.118	.264	0.374	44	24.56 (3.244)	44	23.48 (4.742)	1.238	.216	0.266
Week 8 (T3)	44	28.23 (3.902)	44	25.14 (5.351)	3.039	.002**	0.884	44	25.45 (4.169)	44	23.52 (4.757)	1.985	.047*	0.432
PP														
Week 0 (T1)	44	26.05 (5.044)	44	25.52 (5.551)	.462	.645		44	23.43 (4.673)	44	23.73 (4.672)	-.297	.767	
Week 4 (T2)	36	26.80 (4.411)	44	25.39 (5.226)	1.278	.205	0.292	36	24.66 (3.523)	44	23.48 (4.742)	1.227	.224	0.282
Week 8 (T3)	33	28.79 (4.174)	44	25.14 (5.351)	3.247	.002**	0.761	33	25.70 (4.606)	44	23.52 (4.757)	2.012	.048*	0.466

Note:

*M* = Mean, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 5.13  
The effect of the MSC program on facets (nonreactivity of inner experience) and total scores of mindfulness: Intention-to-Treat (ITT) and Per-Protocol (PP) Analyses

Questionnaire	FFMQ-C														
Facets of mindfulness	Nonreactivity of inner experience								TOTAL of all facets						
	INT Group		WLC group		<i>t</i>	Sig.	Cohen's <i>d</i>	INT Group		WLC group		<i>t</i>	Sig.	Cohen's <i>d</i>	
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>				<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>				
Effect															
Intention to treat															
Week 0 (T1)	44	20.02 (3.195)	44	19.98 (3.267)	.066	.947		44	118.82 (13.510)	44	118.66 (11.064)	.060	.952		
Week 4 (T2)	44	22.06 (2.810)	44	20.18 (3.405)	2.679	.008**	0.602	44	127.61 (10.314)	44	119.11 (11.086)	3.708	.000***	0.743	
Week 8 (T3)	44	22.61 (2.514)	44	20.45 (3.769)	3.047	.002**	0.674	44	131.87 (11.140)	44	119.11 (12.475)	5.023	.000***	1.079	
Per Protocol															
Week 0 (T1)	44	20.02 (3.195)	44	19.98 (3.267)	.066	.948		44	118.82 (13.510)	44	118.66 (11.064)	.060	.952		
Week 4 (T2)	36	22.37 (2.941)	44	20.18 (3.405)	3.013	.003**	0.688	36	128.89 (11.130)	44	119.11 (12.475)	3.885	.000***	0.827	
Week 8 (T3)	33	22.88 (2.595)	44	20.45 (3.769)	3.171	.002**	0.751	33	134.06 (11.903)	44	119.11 (12.475)	5.305	.000***	1.226	

Note:

*M* = Mean, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program

\**p* < .05, \*\**p* < .01, \*\*\**p* < .001

Regarding within-group comparisons, repeated-measures analysis of variance was performed to determine significant differences, if any, between the scores of the facets of mindfulness at T1, T2, T3, and T4 for the INT group ( $n = 33$ ). In addition, the scores of the facets at T3, T4, T5, and T6 of the WLC group ( $n = 23$ ) were also included in the INT group for analysis ( $n = 56$ ). As shown in Table 5.14, the mean scores of all facets increased from T1 to T3. However, significant increases were identified only in the observing, describing, and nonreactivity-of-inner-experience, and the total score of all facets. That is to say no significant increases were observed in the acting-with-awareness, and nonjudging-of-inner experience facets.

For the mean total score of all facets of mindfulness, since the assumption of sphericity was violated ( $X^2(5) = 43.295, p = .000$ ), the degrees of freedom were corrected using the Greenhouse-Geisser estimate of sphericity ( $\varepsilon = .632$ ). After the adjustment, the results showed that the time factor had a significant effect on the changes in total scores ( $F(1.896, 94.789) = 18.503, p = .000$ ). Post hoc tests using Bonferroni correction revealed that the MSC program elicited significant increases in the total scores from T1 to T2 ( $p = .008$ ), then T1 to T3 ( $p = .001$ ), and finally T1 to T4 ( $p = .000$ ). It was evident that the MSC program brought significant increases in the mean total scores of all facets 4 weeks into the treatment.

Of the observing facet, the mean scores increased over time from T1 ( $M = 24.29$ ,  $SD = 4.527$ ) to T2 ( $M = 26.57$ ,  $SD = 4.442$ ), to T3 ( $M = 27.61$ ,  $SD = 4.285$ ), and to T4 ( $M = 28.55$ ,  $SD = 3.563$ ). As the Mauchly's test indicated that the assumption of sphericity was violated ( $X^2(5) = 36.644$ ,  $p = .000$ ), the degrees of freedom were corrected using the Greenhouse-Geisser estimate of sphericity ( $\varepsilon = .670$ ). After the correction, the results showed that the MSC program had a significant effect on the observing facet at the three time points ( $F(2.011, 100.554) = 1$ ,  $p = .000$ ). Post hoc tests using Bonferroni correction revealed that the MSC program elicited significant increases in the scores of the observing facet from T1 to T2 ( $p = .010$ ), from T1 to T3 ( $p = .000$ ), and from T1 to T4 ( $p = .000$ ). Therefore, it was observed that the MSC program brought significant increases in the observing facet 4 weeks into the treatment.

On the describing facet, the mean scores also showed increments over time from T1 ( $M = 26.02$ ,  $SD = 4.506$ ) to T2 ( $M = 27.27$ ,  $SD = 3.904$ ), to T3 ( $M = 27.63$ ,  $SD = 4.485$ ), and to T4 ( $M = 28.31$ ,  $SD = 3.803$ ). With the assumption of sphericity violated ( $X^2(5) = 22.558$ ,  $p = .000$ ) and the Greenhouse-Geisser estimate of sphericity ( $\varepsilon$ ) larger than 0.75, the degrees of freedom were corrected using Huynh-Feeldt estimate of sphericity ( $\varepsilon = .808$ ). After the correction, the results showed that the time factor had a significant effect on the describing facet ( $F(2.518, 125.893) = 8.584$ ,  $p = .000$ ). Post hoc tests using Bonferroni correction revealed that the MSC program elicited significant increases in the scores of the describing facet from T1 to T2 ( $p =$



.045), from T1 to T3 ( $p = .037$ ), and from T1 to T4 ( $p = .001$ ). Therefore, it was obvious that the MSC program brought a significant increase in the mean score of the describing facet 4 weeks into the treatment.

For the nonreactivity-of-inner experience facet, the assumption of sphericity was not violated ( $X^2 (5) = 9.314, p = .097$ ); therefore, the degrees of freedom were corrected using the sphericity assumed. After the correction, the results showed that the time factor had significant effects on the mean scores of the nonreactivity-of-inner-experience facet ( $F (3, 150) = 14.727, p = .000$ ). Post hoc tests using Bonferroni correction revealed that the MSC program elicited significant increases in the scores of the describing facet from T1 to T2 ( $p = .009$ ), from T1 to T3 ( $p = .001$ ), and from T1 to T4 ( $p = .000$ ). Similarly, the MSC program brought a significance increase in the mean score of the nonreactivity-of-inner-experience facet 4 weeks into the treatment.

As regards the acting-with-awareness and nonjudging-of-inner-experience facets, even though the mean scores of both facets increased from T1 to T3, no significant differences were identified.

Table 5.14

Repeated-measures ANOVA on the effect of the MSC program on different facets of mindfulness

Time	T1	T2	T3	T4	T1 vs. T2		T1 vs. T3		T1 vs. T4		T3 vs. T4		Repeated-measures ANOVA	
Facets of mindfulness	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>MD</i>	Sig.	<i>MD</i>	Sig.	<i>MD</i>	Sig.	<i>MD</i>	Sig.	<i>F(n1, n2)</i>	Sig.
Observing	24.29 (4.527)	26.57 (4.442)	27.61 (4.285)	28.55 (3.563)	2.275	.010*	3.314	.000***	4.255	.000***	.941	.094	19.961 (2.011, 100.554)	.000***
Describing	26.02 (4.506)	27.27 (3.904)	27.63 (4.485)	28.31 (3.808)	1.255	.045*	1.608	.037*	2.294	.001**	.686	.403	8.584 (2.518, 125.893)	.000***
Acting with awareness	26.25 (4.882)	26.31 (4.254)	27.39 (4.521)	27.47 (4.640)	.059	1.000	1.137	.615	1.216	.637	.078	1.000	2.433 (2.425, 121.272)	.081
Nonjudging of inner experience	24.22 (3.961)	24.35 (3.815)	25.12 (4.710)	24.82 (4.160)	.137	1.000	.902	.883	.608	1.000	-.294	1.000	1.243 (3, 150)	.296
Nonreactivity of inner experience	20.33 (3.235)	21.86 (3.244)	22.51 (3.177)	23.29 (3.448)	1.529	.009**	2.176	.001**	2.961	.000***	.784	.310	14.727 (3, 150)	.000***
Total	121.12 (12.112)	126.37 (10.910)	130.25 (13.004)	132.45 (12.128)	5.255	.008**	9.137	.001**	11.333	.000***	2.196	.165	18.503 (1.896, 94.789)	.000***

Note:

*M* = Mean, *MD* = Mean difference, *SD* = Standard deviation

T1 = before the MSC program, T2 = 4 weeks into the MSC program, T3 = upon the completion of the MSC program, T4 = 4 weeks after completion of the MSC program

\**p* < .05, \*\**p* < .01, \*\*\**p* < .001

### 5.7 Sustaining Effect of MSC program after completion of the Program

Repeated-measures ANOVA with post-hoc tests using Bonferroni correction were conducted as shown in Tables 5.3, 5.8, 5.10, and 5.14 above for assessing any significant differences between T3 (upon the completion of the MSC program) and T4 (4 weeks after completion of the MSC program). Almost all tests showed no significant differences between T3 and T4.

Referring to Table 5.13 on stress, the mean scores of the level of stress was found to increase from T3 ( $M = 17.69$ ,  $SD = 4.769$ ) to T4 ( $M = 18.73$ ,  $SD = 5.400$ ) 4 weeks after the MSC program. However, no significant differences ( $p = 1.000$ ) were identified in post-hoc tests with Bonferroni correction. As shown in Table 5.8 on self-compassion, while the mean score of the self-kindness, self-judgment, humanity, and mindfulness constructs and the mean total score slightly increased, that of the isolation and over-identification constructs slightly decreased. Among all scores, only the mindfulness construct showed a significant difference ( $p = .043$ ) between T3 ( $M = 13.20$ ,  $SD = 2.088$ ) and T4 ( $M = 13.92$ ,  $SD = 2.123$ ). As shown in Table 5.10 on the elements of compassion fatigue, it was observed that the mean score of the CS element slightly increased from T3 to T4. On the contrary, the BO and STS elements decreased from T3 to T4. However, none of them showed any significant differences between T3 and T4.

## 5.8 Power Analysis

The statistical power of the study was analyzed based on the results of the total scores of SCS-C between the INT and WLC groups. The calculation of the analytical power was based on the effect size and the number of subjects per group in the study. Given the effect size of SCS-C and FFMQ-C was 1.136 and 1.079, sample size of 44 for each group, and alpha of 0.05 (2 tailed), the achieved power was 99.95% and 99.88% respectively.

## 5.9 Summary

In this chapter, it was suggested that the MSC program had significant effects on improving mindfulness, self-compassion, professional quality of life, and stress. Analysis also suggested that there was no relationship between T3 and T4. The next chapter would discuss the results based on the findings in this chapter.

## Chapter 6

### Discussion

#### 6.1 Introduction

In this chapter, the effect of the 8-week MSC program on the subjects in the facets of mindfulness (observing, describing, acting-with-awareness, non-judging-of-inner-experience, non-reactivity-of-inner-experience), constructs of self-compassion (self-kindness, self-judgment, common-humanity, isolation, mindfulness, over-identification), and levels of compassion satisfaction and fatigue (burnout, secondary traumatic stress), and stress will be discussed in turn. Special attention will be put on the implication of the program for nursing students. At the end of the chapter, limitations of the study and future research directions will be explored as well.

#### 6.2 Effect on Perceived Stress

The results support the hypothesis that the MSC program is effective in reducing stress. The effect sizes calculated based on the perceived stress level at the 4<sup>th</sup> week and 8<sup>th</sup> week were medium with Cohen's  $d = 0.525$  and  $0.631$  respectively, which were more effective than Neff and Germer's (2012) finding with Cohen's  $d = 0.37$ . This is consistent with kindness-based meditation of which the effect size was medium with Hedge's  $g = 0.46$  (Galante, Galante, Bekkers, & Gallacher, 2014). Although the effect size of MBSR was high with Cohen's  $d = 0.743$  (Chiesa & Serretti, 2009), it would be difficult to compare on the basis of the calculated effect size. It seems that further study can be conducted to compare the effect of the MSC program with other treatments, such as MBSR and MBCT. Also, the stress level had a tendency to increase 4 weeks after the completion of the MSC program, despite the fact that the levels in mindfulness, self-compassion, and compassion fatigue were still significantly improved 4 weeks after the completion of the MSC program. It appears that

the relationships between stress and other psychological variables were not linear. Further studies are needed to identify any relationships between stress and these variables.

### 6.3 Effect on Self-compassion

The current study also suggests that the MSC program can significantly improve self-compassion. Although mindfulness was treated as the basic element, self-compassion was utilized as the major component of the MSC program. Most of the exercises in the MSC program focused on training self-compassion level, such as self-compassion break, self-compassion exploration through writing, supportive touch, and self-compassion journal. The findings here are consistent with previous studies in that MSC programs can significantly increase the self-compassion level of the subjects as measured by the mean total scores (Albertson et al., 2014; Friis et al., 2016; Haukaas et al., 2018; Neff & Germer, 2012).

However, when comparing the effect size of each study, it seems that they are not very consistent. For instance, in Haukaas and colleagues' study (2018), it was identified that MSC only had a medium effect size on self-compassion (Cohen's  $d = 0.53$ ). But in the current study and that of Neff and Germer (2012), the effect sizes of the MSC programs on self-compassion were larger. One possible explanation was the longer duration of the interventions. It seems that the time duration of the interventions is important in determining the effect sizes of any MSC programs. This is reasonable since each MSC program teaches many meditation techniques, time is required for participants to absorb, practice, and master the skills to cultivate and reach the desired mindfulness and self-compassion levels. Some scholars investigated whether shorter durations of interventions could be as effective. For instance, Demarzo and colleagues (2017) compared the efficacy difference between the standard 8-week mindfulness-based intervention (MBI), the abbreviated 4-week MBI, and the

no-treatment control group. Although the effect size of the abbreviated MBI was similar to that of the standard one and there was no significant difference between both, standard MBI seems to be more popular than abbreviated MBI in tackling anxiety and depression. In fact, most of the available MBIs last for 6 to 12 weeks (Ewais et al., 2019). For interventions with loving-kindness and compassion meditation, the length of interventions usually ranges from 6 to 8 weeks (Shonin, Van Gordon, Compare, Zangeneh, & Griffiths, 2015). So, it seems that more studies on shortened MSC programs are needed for their justification.

When compared with mindfulness, it is not surprising that the effect size of the MSC program (Cohen's  $d = 1.136$ ) on self-compassion is as high as that on mindfulness (Cohen's  $d = 1.079$ ). Other studies also showed that MSC had significant effects on both mindfulness and self-compassion (Haukaas et al., 2018; Neff & Germer, 2012). Being mindful is the first step towards mindful self-compassion. This is the required state of mental readiness for cultivating self-compassion and for self-compassion to be effective. Non-judgmental awareness can free oneself from the auto-pilot mode and prevent distraction from rumination. Self-compassion, on the other hand, emphasizes being kind to oneself. This can help rescue one from suffering and torture. Without mindfulness, people may emphasize egocentric feelings that would only separate them from others, which will in turn increase suffering.

Regarding the constructs of self-compassion, the current study identified that all constructs, including positive factors (self-kindness, common-humanity, mindfulness) and negative factors (self-judgment, isolation, over-identification), significantly improved after the MSC program. Previous studies on MSC mainly reported the mean total scores without giving information on each construct, with the exception of one study where Albertson and colleagues (2014) analyzed each construct on a 3-week version of the MSC program and the

results are consistent with the current study with medium effect sizes ranging from Cohen's  $d$  0.46 to 0.80.

While the positive factors of self-compassion were found to have significant changes 4 weeks into the MSC program, the negative factors showed significant changes only after completion of the program. These findings are of interest for two reasons. Firstly, the negative factors are more important in reflecting psychopathology. Previous studies suggested that while psychopathology, including negative affects like depression, bipolar disorder, anxiety, or schizophrenia, were negatively associated with positive factors of self-compassion, it showed a stronger positive association with its negative factors (Muris & Petrocchi, 2017). Also, some scholars identified that self-compassion level, especially in self-judgment and isolation, was stronger as an indicator for symptom severity of depression and anxiety than the mindfulness level (Van Dam, Sheppard, Forsyth, & Earleywine, 2011). In the current study, although the mindfulness level as measured by FFMQ-C and the positive factors of SCS-C showed significant changes 4 weeks into the MSC program, it may be interpreted as 4 weeks are adequate for building up basic levels in mindfulness and self-compassion, it seems to be more effective in preventing psychopathology if participants can complete the whole 8-week program. The second reason is based on the opinions of some authors who critiqued that self-compassion in fact may not comprise of both positive and negative factors. Although many studies have suggested that self-compassion can reduce and improve self-criticism (Gilbert, 2010; Gilbert & Procter, 2006; Neff, Rude, & Kirkpatrick, 2007; Shahar et al., 2014; Warren, Smeets, & Neff, 2016), López and colleagues (2015) stated that positive and negative factors might not be a bipolar construct. Rather, it was argued that only positive factors belong to self-compassion, negative factors should be distinguished from them and conceptualized as self-criticism (López et al., 2015). Following



a similar line of thought, the conceptual framework of the current study hypothesized that positive and negative factors belong to self-compassion and self-criticism respectively. The main difference between the researcher's hypothesis and the Lopez's was that they were assumed to have opposite effects on self-compassion for the sake of simplicity and usability. Based on the current findings in this study, as the time required for improving the negative factors were longer, it seems that the negative and positive factors may not really be countering one another with self-compassion.

Also, the MSC program may minimize burnout and emotional exhaustion induced by emotional labor. Emotional labor is the act involved in regulating one's feelings to show or hide the emotions required or not required by the job respectively. This act involves two levels of acting, namely surface acting and deep acting. Surface acting means one try to artificially express the required emotions and facial expression in communication, while deep acting means one may regulate the inner feeling in order to achieve the facial expression and emotions required in the job or scenario (Grandey, 2003). Although self-criticism and compassion fatigue in nursing stemmed from various factors such as workload, number of patients, severity of patients' conditions and demand of patients and relatives, some scholars stated that compassion fatigue would also be caused by emotional labor (Barnett, Hays, & Cantu, 2019; Peate, 2014). Communication with appropriate languages and emotions are also very important in facilitating the provision of care and collaboration with each other (Delgado, Upton, Ranse, Furness, & Foster, 2017). Yet, when someone cannot genuinely communicate with appropriate language and emotions, surface acting would be used. When the superficial emotions expressed mismatched with their inner's feeling, this causes emotional dissonance. Emotional dissonance is the key problem as the dissonance itself would further deplete ones' emotional resources, causing or deteriorating burnout and

compassion fatigue, in turn threaten the wellbeing of the employees (Delgado et al., 2017; Grandey, 2000; Zapf, 2002). To prevent from emotional dissonance, theoretically the virtues of nurse should be developed and strengthened, so that they could provide compassionate care without any acting. Yet, despite the fact that compassion is one of the core competence of nursing (American Nurses Association, 2015; Canadian Nurses Association, 2008; International Council of Nursing, 2012; Nursing and Midwifery Board of Australia, 2008), it is unrealistic to expect all nurses to behave perfectly all the time, even if they are under great pressure and having compassion fatigue. The MSC program allows the practitioners to learn how to control their mind, body and emotions. Increase in mindfulness can minimize the impact of stressful event on nurses and decrease the reactivity of nurses. This can hinder nurses from being too judgemental and overreactive, in turn communicate with inappropriate emotions. Also, self-compassion can build up the capacity for deep acting. It is believed that by regular practice of mindful self-compassion, the mental wellbeing and spiritual wellbeing can be transformed and improved.

#### **6.4 Effect on Compassion Satisfaction, Burnout and Secondary Traumatic Stress**

Coming to compassion fatigue, the result seems to support the hypothesis that the MSC program is effective in improving compassion fatigue. The compassion satisfaction level of the INT group was significantly higher than that of the WLC group after completion of the MSC program. One, however, must also note that the mean scores of the compassion satisfaction of the INT group at different time points of data collection, in fact, remained stable. The compassion satisfaction level of the WLC group, on the other hand, decreased significantly from 37.50 at T1 to 36.00 at T2 and 35.84 at T3. It shows that the MSC program is effective not in improving but preventing deterioration in compassion satisfaction. This finding is similar to a study conducted by Gregory (2015), who suggested that their

mindfulness and yoga intervention could help prevent compassion satisfaction from deteriorating. Besides, the above argument is supported by other studies which used ProQOL as the outcome measurement since they showed no significant improvement in compassion satisfaction after interventions (Duarte & Pinto-Gouveia, 2016; Horner, Piercy, Eure, & Woodard, 2014; Potter et al., 2013).

Regarding the burnout element of compassion fatigue, the results support the hypothesis that the MSC program is effective in improving burnout (negative feelings about work). In this study, the burnout level of the INT group decreased from moderate to low, while that of the WLC group remained at a moderate level. This is consistent with previous findings of mindfulness-based interventions or meditations (Duarte & Pinto-Gouveia, 2016; Hevezi, 2016; Horner et al., 2014; Potter et al., 2013).

As for the last element of compassion fatigue, this study, however, cannot confirm the effectiveness of the MSC program on the secondary traumatic stress. The findings are inconsistent with previous studies of mindfulness-based interventions on nurses' burnout, which suggested that interventions could significantly lower the burnout and secondary traumatic stress level (Duarte & Pinto-Gouveia, 2016). The inconsistency may be due to subject selection. Besides, secondary traumatic stress is a stress coming from knowing the traumatic experiences of significant others whilst caring or helping them in such a way that these trauma turns into one's own experience. Previous studies suggested that secondary traumatic stress was mainly observed in nurses working in forensic, emergency, oncology, paediatric, and hospice departments (Beck, 2011), where nurses were exposed to the experiences of trauma, anxiety induced in caring processes with excessive empathy in these intensive care units (Abendroth & Flannery, 2006). The study of Duarte and Pinto-Gouveia

(2016), for example, recruited oncology nurses who had many experiences in handling end-of-life care; whereas the subjects of this study were nursing students who faced a much lower risk of secondary traumatic stress. In addition, they only needed to take care of patients during their clinical practicum, and were mainly observers in complicated or critical cases with their focus on techniques and hands-on skills. Without close contacts with patients, the subjects would have little chance in engagements with excessive empathy and therefore, had a lower risk of experiencing secondary traumatic stress.

### 6.5 Effect on Mindfulness

The results of the MSC program on mindfulness are consistent with those of previous findings. This program increased the mindfulness level of the subjects with an effect size of Cohen's  $d = 1.079$ . In comparison, in the first RCT of the MSC program conducted by Neff and Germer (2012), it was identified that the mindfulness level, as measured by CAMS-R, could be increased by a MSC program with an effect size of Cohen's  $d = 0.6$ . A recent RCT comparing the effect of MSC and an attention training technique (ATT) on subjects with symptoms of depression and anxiety stated that the effect size of MSC on mindfulness was in the range of 0.53 (as measured by FFMQ) to 0.73 (as measured by the detached mindfulness questionnaire [DMQ] [Haukaas, Gjerde, Varting, Hallan, & Solem, 2018]). The key focus of all MSC programs is on self-compassion, with a foundation of being mindfully and nonjudgmentally aware of self and bodily sensation. Since MSC comprises mindfulness and self-compassion, the findings in this study showed that a certain amount of practice in strengthening mindfulness (mindful breathing, mindful eating, mindful walking, and body scan) could raise the mindfulness level of the subjects.

Considering specific effects on different facets of mindfulness, it appears that both this study and other studies have mixed results. In this study, significant effects were found on the facets of observing, acting-with-awareness, non-judging-of-inner-experience, and non-reactivity-of-inner-experience in the between-group comparisons. No significant change, however, was found in the describing facet in the between-group comparison. In contrast, previous studies seldom reported and discussed the specific changes of each of the facets of mindfulness. Even if reported, the changes of each facet were not consistent among the studies. For instance, in the study conducted by Querstret, Cropley, and Fife-Schaw (2017), their interventions, internet-based instructor-led mindfulness intervention, only had significant effects on describing, acting-with-awareness, and non-judging-of-inner-experience, but not on non-reactivity-of-inner-experience. In another study conducted by the same authors (2018), the online mindfulness interventions had most prominent effect on improving non-judging-of-inner-experience, followed by acting-with-awareness and describing, yet no specific effect was found on changing non-reactivity-of-inner-experience again. Similar inconsistency is also observed in studies on other MBSR or modified programs based on MBSR, which mainly had significant effects on observing (Manotas, Segura, Eraso, Oggins, & McGovern, 2014), non-judging-of-inner-experience (de Vibe et al., 2013; Manotas et al., 2014), and non-reactivity-of-inner-experience (de Vibe et al., 2013; Martins, Nicholas, Shaheen, Jones, & Norris, 2013). Another study on compassion also showed significant change in the facets of describing, non-judging-of-inner-experience, and non-reactivity-of-inner-experience (Ko et al., 2018). So, it seems that different MSC programs may bring different effects on the facets of mindfulness. Hence, further studies may be necessary to determine the components of the programs affecting the development of each facet of mindfulness.

From the findings, it seems that the development of each facets of mindfulness can be affected by several factors. The first possible explanation may be the time required to develop the facet. Among those facets with significant changes after completion of the 8-week MSC program, two facets, namely observing and non-reactivity-of-inner-experience, had already shown significant improvement in the within-group comparison 4 weeks into the MSC program whilst the other two facets, including acting-with-awareness and nonjudging-of-inner-experience, required 8 weeks to achieve significant improvements. It was proposed that some facets may need more time to be developed while others may be easier to develop. Querstret and colleagues (2017, 2018) also supported this argument. In their study, it was suggested that observing, describing, and acting-with-awareness could be grasped at an earlier stage during training, and more time was required for cultivating facets of non-judging-of-inner-experience and non-reactivity-of-inner-experience (Querstret et al., 2018). Similar opinion was expressed by Pang and Ruch (2019). In their study which investigated the facets of mindfulness retained by subjects upon finishing meditation training between current meditators, past meditators and non-meditators, it was identified that while the level of observing and describing remained stable, other facets including acting- with-awareness, non-judging-of-inner-experience, and non-reactivity-of-inner-experience subsided after the cessation of meditation practice. It was proposed that observing and describing are some basic skills that once people have acquired, they would be less likely to be washed off due to lack of practice. To supplement this analysis, the researcher opines that cultivation of these facets may require continuous or regular practice of skills, such as being aware of an anchor non-judgmentally, so as to sustain and retain these facets of mindfulness for a longer term. However, the current study did not show completely consistent findings with the studies mentioned above. Observing facet was the only facet which was also described in the studies mentioned as a facet could be developed at earlier stage. While describing was also

commonly mentioned, no significant improvement was identified in the current study. So, the current study would propose that other than the difference in time required for development each facets, the interventions itself may also be important. For the MSC program, although training on mindfulness was included in the MSC program, the emphasis of the programme was predominantly on self-compassion. This may be one of the reason to explain the why MSC program required longer time to develop individuals' facets of acting-with-awareness and nonjudging-of-inner-experience.

From the above it seems difficult to make any definite predictions on the effects of the MSC programs for several reasons. First, the selection criteria of the subjects in these studies were different. The subjects varied from general population (Querstret et al., 2018) to current and past meditators (Pang & Ruch, 2019). Also, some previous RCTs on MSC programs did not investigate in depth the effects of each facet of mindfulness. Up to now, only four RCTs had been done (Albertson, Neff, & Dill-Shackleford, 2014; Friis, Johnson, Cutfield, & Consedine, 2016; Hauaas et al., 2018; Neff & Germer, 2012), and none of them investigated the effects of the MSC programs on the five individual facets of mindfulness as defined in FFMQ. It appears that more RCTs on MSC should be conducted to ascertain the time required to cultivate each of the individual facets of mindfulness. This is important as the information can be used to modify the duration of any future MSC programs to improve attrition and have more immediate benefits to individuals with specific needs. Due to some inconsistent findings, it may be too early to conclude at this stage which of the individual facets can be grasped within a shorter period of time. Nonetheless, this is definitely something worth exploring further.

## 6.6 Effect of Therapeutic Factors of Group Psychotherapy on the MSC Program

The effect of the MSC program may also be reinforced by conducting the psychotherapy in group approach. Different from individual approach, group psychotherapy may allow participants to interact with, support and learn from each other. It has long been suggested that conducting psychotherapy in group approach may have additional therapeutic factors. Yalom (1995) has proposed 12 therapeutic factors for group psychotherapy. These include: (1) altruism, (2) instillation and maintenance of hope, (3) self-understanding, (4) group cohesiveness, (5) catharsis, (6) guidance, (7) identification, (8) interpersonal learning-input, (9) interpersonal learning – output, (10) the corrective recapitulation of the primary family group, (11) existential factors, and (12) universality. Among all factors mentioned, altruism, universality, interpersonal learning and guidance are the factors which may further strengthen the effect of the MSC program. Being altruistic is to help others without considering oneself. This is similar to being compassionate to others. Offering kindness to others is purely based on virtues of human. It is quite a natural reaction for one to offer help and kindness to someone in need, but it is not uncommon for someone to forget to be kind to oneself especially when problems and failures are encountered. Conducting MSC program in group approach allow people to offer kindness to others, and thereby practise and learn how to offer to oneself. Also, group intervention allows participants to communicate with each other. One may also learn through interpersonal learning. Under appropriate situation, atmosphere, topic and facilitation of instructor and the group, participants can exchange knowledge, idea and advice with each other. More importantly, during the communication, they can recognize that they are not the only one who face the problems and situations, as many people are sharing similar feelings, thoughts and problems. This is called universality, which is similar to two key concepts of mindful self-compassion, namely common humanity



versus isolation. Sharing of information among people enhances the concept of common humanity and improve sense of isolation.

It seems that it is more beneficial to use group approach to deliver the MSC program. However, some scholars criticized that whether psychotherapy could be beneficial by using group approach in fact depended on several factors, such as type of group, group size, goal, characteristics of participants, duration of the intervention and developmental stage of participant (Bloch & Crouch, 1985). Different interventions and participants may have perceived different therapeutic factors. For instance, while identification was reported by patients with neurotics and personality disorders as lowest ranking factor in group analysis (Vlastelica, Pavlovic, & Urlic, 2002), it was reported by patients with panic disorder as one of the significant and helpful therapeutic factors (Behenck, Wesney, Finkley, & Heldt, 2017). On the other hand, while self-understanding was reported as important factor by the studies mentioned (Behenck, et al., 2017; Vlastelica et al., 2002), another study on adolescents with personality disorder reported that interpersonal learning was significantly associated with therapeutic recovery (Hauber, Boon, & Vermeiren, 2019).

The current study did not intend to identify whether the effect of the MSC program would be reinforced by group approach. Even if group approach can help, it is proposed that the group effect may not be strong. During 3-hour session of the MSC program, other than group discussions and some informal exercises, meditations are the key activities and the practice is individual. Also, the MSC program emphasizes at least 30 minutes of regular self-practice. So, it is uncertain that whether group factor is really significant in the MSC program. Further study may be required to investigate whether there is any difference in conducting MSC program individually or in group.

## 6.7 Implications

Occupational stress in nursing is severe in Hong Kong. Facing aging population, the quantity of patients and required healthcare needs are increasing as well. The community expectation on quality healthcare of an aging population is high. Manpower of nurses were inadequate in public sector with nurse to patient ratio in public hospital at 1:10-11 in 2014 (Association of Hong Kong Nursing Staff, 2014) , which is incomparable with the international standard of 1:4-6. The nursing profession faces a severe manpower shortage which in itself causes an extremely high level of stress and brings compassion fatigue to nurses. Consequence of stress in nursing are catastrophic to the healthcare system in several aspects. In the perspective of occupational health, stress is detrimental to nurses' and nursing students' psychological health and wellbeing. Compassion fatigue and burnout may also be resulted as well. In the perspective of healthcare administration, nurses' job satisfaction, future occupational preparedness and clinical competency will be affected as well, which may in turn decrease the health care quality, increase the number of preventable incidence, and increase the turnover rate. In the perspective of nursing students, their stress mainly stems from multifarious clinical issues. Facing a new job environment which demands error-free and professional care, they will experience big challenges, which very often are the key sources of stress. To promote the psychological wellbeing of nurses, it is insufficient to just rely on strategies to alleviate the workload of the frontline nurses as this takes longer time to achieve, actions should also be taken to reduce the stress faced by nurses. The MSC program is shown to be effective in reducing stress, cultivating mindfulness, self-compassion level, and reducing compassion fatigue in nursing students. Study also suggested that empathetic people may be at higher risk of compassion fatigue, while development of self-compassion can be exert protective effect against compassion fatigue (Duarte, Pinto-Gouveia,

& Cruz, 2016). It is hoped that the MSC program can be a useful and effective tool to reduce stress and prevent compassion fatigue of nurses.

The MSC program may also be applied in nursing education. While compassion and empathy are core competences required in nursing, development of empathy in nursing education is a difficult task, especially in Hong Kong. This is partly due to the culture of education. The education system in Hong Kong has deep-rooted examination-oriented culture since Hong Kong was still a British colony. The function of examination was to make sure that only elite students with high scores could get into university education (Berry, 2011). Despite the education reform in past decades, this culture still exists until now. Under this examination-oriented culture, students were trained to focus on how to prepare for the examination under teacher-centered pedagogy (Kwok, 2004). Nursing is one of the most competitive options in university education in Hong Kong. Obviously, only students with high marks can get a place of nursing in university. And in reality, majority of student who could get high mark in examination were examination-oriented. Being examination-oriented also makes students nowadays become more utilitarian (Phillipson & Lam, 2011). Study has identified that utilitarian people showed significantly lower empathetic concern (Gleichgerrecht & Young, 2013). This make empathy education become more difficult in nursing education. The MSC program which can significantly improve mindfulness and self-compassion may have effect in enhancing feeling of empathy. While level of mindfulness do not have any significant relationship with empathic concern, strong positive correlation was identified between self-compassion (Kingsburg, 2009). Development of self-compassion not only prevent compassion fatigue (Duarte et al., 2016), but also be able to enhance feelings of empathy. Moreover, self-compassion has shown to have positive correlation with emotional intelligence (Heffernan, Quinn Griffin, McNulty, & Fitzpatrick, 2010). Although limited

studies were conducted to identify the relationship between emotional intelligence and patient outcome, it was identified that emotional intelligence is positively correlated with nursing performance among nursing students (Beauvais, Brady, O'Shea, & Griffin, 2011). In view of this, the MSC program should be recommended to the nursing program preventing compassion fatigue, improve emotional intelligence, and also potentially for developing the humanness and virtues of nursing students.

Last but not least, it is believed that MSC programs may have clinical applications for people with depression and anxiety disorder. Studies have already suggested mindfulness-based interventions and loving-kindness meditations are useful in improving symptoms of patients with depression and anxiety. This study has shown the effectiveness of the MSC program in raising both the mindfulness level and self-compassion level of the learners. Studies also suggested that individuals high in facets of mindfulness have fewer symptoms of depression and anxiety. For instance, higher in acting-with-awareness was related to lower depressive symptomatology (Cash & Whittingham, 2010). Also, improvement in non-judging-of-inner-experience was also related to lower anxiety (Cash & Whittingham, 2010; Desrosiers, Klemanski, & Hoeksema, 2013), depression, and stress-related symptomatology (Cash & Whittingham, 2010), while non-reactivity-of-inner-experience was found to be inversely related to depressive symptomatology (Desrosiers et al., 2013). All these findings suggest that MSC programs may have potential effects on improving depression, anxiety, and stress-induced symptoms. Upon these promising findings, future studies may focus on the effect of the MSC program on clinical subjects with depression and anxiety.

## 6.8 Limitations

Several limitations should be considered when interpreting the results of this study. First, the target population of this study were just a healthy group of nursing students in Hong Kong. Despite the promising results from this study, these may not be completely transferrable to other people with different demographic characteristics. It is advisable to conduct more extensive researches before the MSC program can apply to other subjects such as people with depression and anxiety.

Another limitation is that the outcome measurements in this study were based on the self-report method. Self-reported data are convenient to collect, yet they may be subject to biases. Apart from using measurement tools with good validity and reliability, the best way to prevent biases is to combine self-report tools with objective measurements. It has been reported in a number of studies that several measurement methods such as electroencephalography (Aftanas & Golosheykin, 2005; Lagopoulos et al., 2009; Lomas et al., 2015; Takahashi et al. 2005; Travis, 2001; Travis, Tecce, Arenander, & Wallace, 2002; Travis & Walalce, 1999), functional magnetic resonance imaging (MRI) (Holzel et al., 2011; Lazar et al., 2005; Luders, Toga, Lepore, & Gaser, 2009; Lutz, Greischar, Rawlings, Ricard, & Davidson, 2004; Lutz et al., 2014; Tang et al., 2012; Vestergaard-Poulsen et al., 2009), laboratory tests (Breines et al. 2014; Carlson, Speca, Faris, & Patel, 2007; Daubenmier et al., 2012; Jung et al., 2010), and heart rate variability (Krygier et al., 2013; McCraty & Shaffer, 2015; Reynard, Gevirtz, Berlow, Brown, & Boutelle, 2011; Segerstrom & Nes, 2007), can be used to assess the physiological variables related to psychological changes. However, the results available so far are still inconsistent. A reliable objective measurement on mindfulness and self-compassion is yet to be developed (Baer, 2011); and once available, it should be introduced as a measurement tool.

Besides, the MSC program suffered from high attrition rates. The dropout rate of similar studies was around 25% (Swift & Greenbery, 2012). For this study, the dropout rate was about 43%, which is higher than normal. The majority of the drop-outs (21/38) left because of time clashes with their school lessons. Some subjects (10/38) dropped out simply because of a lack of time to participate or self-practice. It is advisable for future studies to organize the MSC programs with a greater focus on the availability and needs of the subjects.

Despite the effort in optimizing the subject recruitment process, using social media as subject recruitment method may still have some potential risks in sampling bias. In current study, the social media including Facebook and Instagram were used as a channel to promote the project. Subjects who were interested in the project left their contact through Google form. Afterwards, face-to-face briefing sessions were arranged individually for explaining the project and confirming the selection criteria before they were officially recruited, which prevent from recruiting non-targeted subjects. Also, some authors criticized that subjects such as elderly might not use social media, which induce a sampling bias in recruiting certain kind of subjects (Arigo, Pagoto, Carter-Harris, Lille, & Nebeker, 2018). The current study targeted on nursing students and the age of nursing students in Hong Kong usually ranged from 18 to 24 years old. While Facebook was reported as the most popular social media, Instagram and snapchat were reported to be heavily used by younger adults aged 18 to 24-year-old (Pew Research Center, 2018). So, Facebook and Instagram should be a reasonable choice to promote the project to this age group. Yet, even if the targeted population were using Facebook or Instagram, whether the post could be viewed by them in fact only relied on probability. So, some targeted population might still be unable to access to the recruitment post, which may result in a sampling bias.

Also, regarding the characteristics of recruited subjects, the majority of the recruited subjects were female. Only 19.3% of the recruited subjects were male. The major reason was due to sex difference in nursing population. In Hong Kong, around 13.4% of registered nurses were male (Department of Health, 2016). Using convenience sampling without intention to balance the number of both sexes might result in sex bias as observed in the current study. In addition, nursing studies were reported with significant sex bias. It was reported that on average only one-fourth of subjects recruited in nursing studies were male (Polit & Beck, 2008; 2013). The great difference between both sexes might affect the generalizability of the results to male.

Although mindfulness and self-compassion originated from Buddhism, the MSC program did not involve any discussion or practice related to religions. Yet, subjects with religious belief might have different perception on the MSC program, which as a result might affect the effect of and adherence to the MSC program. For instance, two Christian subjects dropped out from the MSC program as they believed that the MSC program in fact was contradicting their religious faith. Unfortunately, the current study did not investigate the religious belief of recruited subjects and did not record subjects' religions. In future studies, as an important confounding factor, religious belief should also be recorded and its effect on mindfulness should also be investigated.

Finally, educational level would also be a limitation. Subjects of the current studies were students studying sub-degree, bachelor degree or master degree in nursing program with age ranged from 18-25 years old. Educational level was relatively high. Programs using mindfulness practice have been shown to be effective in different educational level and age

group, including university students (Galante et al., 2018; Gallego, Aguilar-Parra, Cangas, Langer, & Mañas, 2014; Randal, Pratt, & Bucci, 2015), grade 1 to 12 students (Zenner, Herrnleben-Kurz, & Walach, 2014), and kindergarten children (Thierry, Bryant, Nobles, & Norris, 2016). As the MSC program involved group discussion, which might require certain cognitive functions and educational level, further studies may investigate whether the MSC program could also be effectively applied in different age group and different educational level.

## 6.9 Recommendations for Future Research

Based on the current results, future studies may focus on several directions. First, this study shows promising results with the MSC program; in future the effect of the MSC program can be studied by comparing with other reliable interventions such as mindfulness-based stress reduction (MBSR) or other relaxation techniques commonly adopted in the population being studied. Second, until now there is still a lack of studies to ascertain the effect of the MSC program on clinical subjects with psychological problems. It is advisable that the effectiveness of the program on clinical subjects be explored. Third, physiological changes, if any, induced by the MSC program were still not conclusive. Future studies are needed to investigate whether or not the MSC program can induce these changes. Finally, seeing the high attrition rates in this study, it is advisable to ascertain whether programs of shorter duration could be as effective as the original 8-week program.

## 6.10 Summary

This chapter discussed how MSC programs can improve mindfulness, self-compassion, compassion satisfaction, and reduce compassion fatigue and stress. Limitations



of this study and the intervention were elaborated, with suggestions for the directions of future research. The next chapter will be the final chapter that concludes the whole research project.

## Chapter 7

### Conclusion

#### 7.1 Introduction

In Hong Kong, nurses suffer from severe stress both during training and in their professional life after graduation. Facing increasing workload with demanding patient expectation, their stress level will keep on rising without any abating signs. This problem affects nurses' health and wellbeing, causing self-harm behaviors and burnout of nurses.

This study was designed as a randomized wait-list controlled trial with convenience sampling to identify the effectiveness of a mindful self-compassion (MSC) program on stress reduction of nursing students. This study sheds light on the effectiveness of the MSC program in reducing compassion fatigue and stress levels, and increasing mindfulness, self-compassion, and compassion satisfaction levels of the nursing students.

In this chapter, the research questions will be revisited and answered with the results from this study. The implications and recommendations for future studies will also be outlined.

#### 7.2 Research Problems

The aim of the study was to evaluate whether it had any significant effects on mindfulness, self-compassion, compassion fatigue, and stress of the subjects. The following research questions were raised:

1. Is there any difference in stress level between the intervention group and the wait-list control group before and after the MSC program?
2. Is there any difference in the self-compassion level between the intervention group and the wait-list control group before and after the MSC program?

3. Is there any difference in compassion fatigue level between the intervention group and the wait-list control group before and after the MSC program?
4. Is there any difference in the mindfulness level between the intervention group and the wait-list control group before and after the MSC program?

The findings on the hypotheses of this study will be summarized in the following section.

### **7.3 Summary of Approaches and Findings**

This study adopted a randomized wait-list controlled trial to investigate the effect of the MSC program on nursing students. Eighty-eight subjects were recruited by convenience sampling. All participating subjects were students with clinical practicum experience in Registered Nurse (RN) programs. They were randomized into equal-sized intervention (INT) group and waitlist control (WLC) group. The subjects in the intervention (INT) group participated first in an 8-week MSC program conducted by a certified MSC teacher, then followed by the subjects in the wait-list control (WLC) group with the same MSC program. Data were collected at various time points: before the MSC program, 4 weeks into the MSC program, upon completion of the MSC program, and 4 weeks after completion of the MSC program. The effects of the MSC training were measured using the Five Facet Mindfulness Questionnaire - Chinese version (FFMQ-C), Self-Compassion Scale – Chinese (SCS-C), Chinese Professional Quality of Life scale (Chinese ProQOL-5), and the Chinese Perceived Stress Scale (Chinese PSS).

Finally, for the first research question on stress, the MSC program had significant effects on stress at both T2 and T3.

In response to the second research question on self-compassion, significant effects were observed at T2 on the self-kindness, humanity, isolation, mindfulness, and over-identified constructs (with the exception of self-judgement), and overall self-compassion. At T3, significant effects were observed on all constructs and overall self-compassion.

Coming to the third research question on compassion fatigue, no significant effects were observed at T2 (4 weeks into the MSC course) and significant effects were identified only after the completion of the MSC course on the compassion satisfaction and burnout elements (with the exception of secondary-traumatic-stress). It seems that the MSC course did not have any significant effects on the secondary-traumatic-stress element.

Responding to the last research question on mindfulness, at T2 (4 weeks into the MSC course), the MSC program had significant effects on the observing, describing, and nonreactivity-of-inner-experience facets (with the exception of acting-with-awareness, nonjudging-of-inner-experience), and overall mindfulness. At T3 (upon the completion of the MSC course), significant effects on all facets, and overall mindfulness were found.

To sum up, the MSC program was effective in improving mindfulness and self-compassion, and reducing compassion fatigue and stress.

#### **7.4 Implications and Recommendations**

The MSC program is suitable for use as an option in stress reduction strategies designed to handle the ever-rising stress of nurses and nursing students by improving their mindfulness and self-compassion, and reducing their compassion fatigue and stress. This can

also be used in improving nursing program. The MSC program may also be applied to people with psychological problems such as depression and anxiety disorder.

The results from this study were encouraging and participants in the study had benefited from the techniques they learnt. A note of caution, however, is necessary because the population used in this study were healthy nursing students in Hong Kong and more studies should be conducted on different populations of different occupations, age groups, and disease groups in order to ensure transferability and applicability of the MSC program. Also, currently no standardized objective assessment has been developed to measure mindfulness and self-compassion. It is advisable that further studies should be conducted to identify physiological changes, if any, in people practicing MSC.

## 7.5 Summary

In this chapter, the background of the study and the research questions were re-visited. Approaches used by the researcher and the key findings of the MSC program were elaborated. The implications and limitations of this study were also discussed. Recommendations on future research directions of MSC programs were made.

The effectiveness of the MSC program on nursing students is supported. It was found to be effective in improving their mindfulness and self-compassion, and reducing their compassion fatigue and stress. It could also be used to reduce their burnout level and stress level. In the light of that the high stress level of nurses will not decline in the foreseeable future, the MSC program is a good tool to address their stress issues at the earliest possible time.

## References

- 黃敦群, 紀乃文, 張雅婷, & 郭洧岑. (2014). 情緒勞動的前因、後果與潛在干擾變數: 統合分析法之探討. [Antecedents, Consequences, and Potential Moderators of Emotional Labor: A Meta-Analytic Investigation]. *人力資源管理學報*, 14(3), 93-134. DOI:10.6147/jhrm.2014.1403.04
- 蔣欣欣. (2019). 照護行動的身體感. [Subjectivity of the body in nursing care]. *護理雜誌*, 66(5), 26-31. doi:[https://doi.org/10.6224/JN.201910\\_66\(5\).05](https://doi.org/10.6224/JN.201910_66(5).05)
- Abaci, R., & Arda, D. (2013). Relationship between self-compassion and job satisfaction in white collar worker. *Procedia - Social and Behavioral Sciences*, 106, 2241-2247. doi:10.1016/j.sbspro.2013.12.255
- Adams, R. E., Figley, C. R., & Boscarino, J. A. (2008). The Compassion Fatigue Scale: Its Use With Social Workers Following Urban Disaster. *Research on Social Work Practice*, 18(3), 238-250. doi:10.1077/1049731507310190.
- Abendroth, M., & Flannery, J. (2006). Predicting the risk of compassion fatigue: a study of hospice nurses. *Journal of Hospice and Palliative Nursing*, 8(6), 346-356.
- Aftanas, L., & Golosheykin, S. (2005). Impact of regular meditation practice on EEG activity at rest and during evoked negative emotions. *International Journal of Neuroscience*, 115, 893-909. doi:10.1080/00207450590897969.

- Aich, P., Potter, A. A., & Griebel, P. J. (2009). Modern approaches to understanding stress and disease susceptibility: A review with special emphasis on respiratory disease. *International journal of general medicine*, 2, 19.
- Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J., Busse, R., Clarke, H., Giovannetti, P., ... Shamian, J. (2001). Nurses' report on hospital care in five countries. *Health Affairs*, 20(3), 43-53.
- Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J., & Silber, J. H. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job satisfaction. *Journal of American Medical Association*, 288(16), 1987-1993. doi:10.1001/jama.288.16.1987.
- Albertson, E. R., Neff, K. D., & Dill-Shackleford, K. E. (2014). Self-compassion and body dissatisfaction in women: a randomized controlled trial of a brief meditation intervention. *Mindfulness*, 6(3), 444-454. doi:10.1007/s12671-014-0277-3.
- Allen, A. B., Goldwasser, E. R., & Leary, M. R. (2012). Self-compassion and well being among older adults. *Self and Identity*, 11, 428-453.  
<http://dx.doi.org/10.1080/15298868.2011.595082>
- Allen, A. B., & Leary, M. R. (2013). Self-compassionate Responses to Aging. *The Gerontologist*, 54(2), 190-200. doi:10.1093/geront/gns204.

Alleva, J., Roelofs, J., Voncken, M., Meevissen, Y., and Alberts, H. (2014). On the relation between mindfulness and depressive symptoms: rumination as a possible mediator. *Mindfulness* 5, 72–79.

Alzayyat, A., & Al-Gamal, E. (2014). A review of the literature regarding stress among nursing students during their clinical education. *International Nursing Review*, 61(3), 406-415.

American Nurses Association (2015) *Code of Ethics for Nurses with Interpretive Statements*. Retrieved from <https://www.nursingworld.org/practice-policy/nursing-excellence/ethics/code-of-ethics-for-nurses/>

Apple Daily (2012, May 27). 20歲男護生 41 樓躍下亡. Retrieved from <http://hk.apple.nextmedia.com/news/art/20120527/16372297>

Apple Daily (2016, March 14). 理大精神護理系女生墮樓亡. Retrieved from <http://hk.apple.nextmedia.com/news/art/20160314/19528802>

Apple Daily (2017, April 13). 不堪壓力23歲女學護跳樓死. Retrieved from <https://hk.news.appledaily.com/local/daily/article/20170413/19989103>

Arigo, D., Pagoto, S., Carter-Harris, L., Lillie, S. E., & Nebeker, C. (2018). Using social media for health research: Methodological and ethical considerations for recruitment and intervention delivery. *Digital health*, 4, 2055207618771757.



Association of Hong Kong Nursing Staff (2008). *HA nurse human resource survey 2008*.

Retrieved from <http://www.nurse.org.hk/media/contentbuilder/upload/c04040801.pdf>

Association of Hong Kong Nursing Staff (2011). *HA nurse human resource survey 2011*.

Retrieved from <http://www.nurse.org.hk/media/contentbuilder/upload/c04041104.pdf>

Association of Hong Kong Nursing Staff (2012). *HA nurse human resource survey 2012*.

Retrieved from <http://www.nurse.org.hk/media/contentbuilder/upload/c04041207.pdf>

Association of Hong Kong Nursing Staff (2013). *HA nurse human resource survey 2013*.

Retrieved from <http://www.nurse.org.hk/media/contentbuilder/upload/c04041308.pdf>

Association of Hong Kong Nursing Staff (2014). *HA nurse human resource survey 2014*.

Retrieved from <http://www.nurse.org.hk/media/contentbuilder/upload/c04041408.pdf>

Atlantis, E., Fahey, P., Cochrane, B., & Smith, S. (2013). Bidirectional associations between clinically relevant depression or anxiety and COPD: a systematic review and meta-analysis. *Chest*, 144(3), 766-777.

Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10(2), 125-143.

Baer, R. A. (2011). Measuring mindfulness. *Contemporary Buddhism*, 12(01), 241-261.

doi:10.1080/14639947.2011.564842

- Baer, R. A., Lykins, L. B., & Peters, J. R. (2012). Mindfulness and self-compassion as predictors of psychological wellbeing in long-term meditators and matched nonmeditators. *The Journal of Positive Psychology*, 7, 230-238.
- Baer, R. A., Smith, G. T., and Allen, K. B. (2004). Assessment of mindfulness by self-report. The Kentucky Inventory of Mindfulness Skills. *Assessment*, 11(3), 191-206.
- Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., ... Williams, J. M. G. (2008). Construct Validity of the Five Facet Mindfulness Questionnaire in Meditating and Nonmeditating Samples. *Assessment*, 15, 329-342. doi:10.1177/1073191107313003.
- Bam, V. B., Oppong, G. A., & Ibitoye, M. B. (2014). Stress and coping mechanisms of nursing students during clinical practice in Ghana. *Journal of Science and Technology (Ghana)*, 34(2), 50-59.
- Barnard, L. K., & Curry, J. F. (2012). The relationship of clergy burnout to self-compassion and other personality dimensions. *Pastoral Psychology*, 61, 149-163.  
doi:10.1007/s11089-011-0377-0
- Barnett, M. D., Hays, K. N., & Cantu, C. (2019). Compassion fatigue, emotional labor, and emotional display among hospice nurses. *Death Studies*, 1-7.

- Beauvais, A. M., Brady, N., O'Shea, E. R., & Griffin, M. T. Q. (2011). Emotional intelligence and nursing performance among nursing students. *Nurse education today*, 31(4), 396-401.
- Beck, C. T. (2011). Secondary traumatic stress in nurses: a systematic review. *Archives of Psychiatric Nursing*, 25(1), 1-10.
- Behenck, A., Wesner, A. C., Finkler, D., & Heldt, E. (2017). Contribution of group therapeutic factors to the outcome of cognitive–Behavioral therapy for patients with panic disorder. *Archives of psychiatric nursing*, 31(2), 142-146.
- Belzer, F., Schmidt, S., Lucius-Hoene, G., Schneider, J. F., Orellana-Rios, C. L., & Sauer, S. (2013). Challenging the construct validity of mindfulness assessment—a cognitive interview study of the Freiburg mindfulness inventory. *Mindfulness*, 4(1), 33-44. doi:10.1007/s12671-012-0165-7
- Bernard, L. K., & Curry, J. F. (2011). Self-compassion: conceptualization, correlates, & interventions. *Review of General Psychology*, 15(4), 289-303. doi:10.1037/a0025754.
- Bergomi, C., Tschacher, W., & Kupper, Z. (2013). The assessment of mindfulness with self-report measures: Existing scales and open issues. *Mindfulness*, 4(3), 191-202. doi:10.1007/s12671-012-0110-9.

- Berry, R. (2011). Assessment trends in Hong Kong: Seeking to establish formative assessment in an examination culture. *Assessment in Education: Principles, Policy & Practice*, 18(2), 199-211.
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., ... Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11, 230-241.
- Bloch, S., & Crouch, E. (1985). *Oxford medical publications. Therapeutic factors in group psychotherapy*. Oxford University Press.
- Blomberg, K., Griffiths, P., Wengstrom, Y., May, C., & Bridges, J. (2016). Interventions for compassionate nursing care: a systematic review. *International Journal of Nursing Studies*, 62, 137-155.
- Bluth, K., & Blanton, P. W. (2014). Mindfulness and self-compassion: exploring pathways to adolescent emotional well-being. *Journal of Child and Family Studies*, 23, 1298-1309. doi:10.1007/s10826-013-9830-2
- Bolton, S. (2001). Changing faces: nurses as emotional jugglers. *Sociology of health & illness*, 23(1), 85-100.

- Braehler, C., Gumley, A., Harper, J., Wallace, S., Norrie, J., & Gilbert, P. (2013). Exploring change processes in compassion focused therapy in psychosis: Results of a feasibility randomized controlled trial. *British Journal of Clinical Psychology*, 52(3), 199-214. doi:10.1111/bjc.12009.
- Breines, J. G., Thoma, M. V., Gianferante, D., Hanlin, L., Chen, X., & Rohleder, N. (2014). Self-compassion as a predictor of interleukin-6 response to acute psychosocial stress. *Brain, Behavior, and Immunity*, 37, 109-114. doi:10.1016/j.bbi.2013.11.006.
- Brewin, C. B., & Firth-Cozens, J. (1997). Dependency and self-criticism as predictors of depression in young doctors. *Journal of Occupational Health Psychology*, 2, 242e246. <http://dx.doi.org/10.1037/1076-8998.2.3.242>.
- British Columbia Nurses' Union (2011). *BCNU position statement on mandated nurse-to-patient ratios*. Retrieved from <https://www.bcnu.org/AboutBcnu/Documents/position-statement-nurse-patient-ratio.pdf>
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84, 822-848.
- Brunero, S., Lamont, S., & Coates, M. (2010). A review of empathy education in nursing. *Nursing Inquiry*, 17(1), 65-74.

- Buchheld, N., Grossman, P., & Walach, H. (2001). Measuring mindfulness in insight meditation (Vipassana) and meditation-based psychotherapy: The development of the Freiburg Mindfulness Inventory (FMI). *Journal for Meditation and Meditation Research, 1*, 11-34.
- California Nurses Association, National Nurses Organizing Committee. (2009). The ratio solution: CNA/NNOC's RN-to-patient ratios work - better care, more nurses. Retrieved from [http://nurses.3cdn.net/cd91f6731ee0c22b41\\_uqm6yx8dy.pdf](http://nurses.3cdn.net/cd91f6731ee0c22b41_uqm6yx8dy.pdf)
- Canadian Nurses Association (2008). *Code of Ethics for Registered Nurses*. Canadian Nurses Association, Ottawa.
- Carlson, L. E., Speca, M., Faris, P., & Patel, K. D. (2007). One year pre-post intervention follow-up of psychological, immune, endocrine and blood pressure outcomes of mindfulness-based stress reduction (MBSR) in breast and prostate cancer outpatients. *Brain, Behavior, and Immunity, 21*, 1038-1049. doi:10.1016/j.bbi.2007.04.002.
- Cash, M., & Whittingham, K. (2010). What facets of mindfulness contribute to psychological well-being and depressive, anxious, and stress-related symptomatology? *Mindfulness, 1*(3), 177-182.
- Chan, C. K. L., So, W. K. W., & Fong, D. Y. T. (2009). Hong Kong baccalaureate nursing students' stress and their coping strategies in clinical practice. *Journal of Professional Nursing, 25*(5), 307-313. doi:10.1016/j.profnurs.2009.01.018.

Chadwick, P., Hember, M., Symes, J., Peters, E., Kuipers, E., & Dagnan, D. (2008).

Responding mindfully to unpleasant thoughts and images: reliability and validity of the Southampton mindfulness questionnaire (SMQ). *British Journal of Clinical Psychology*, 47(4), 451-455. doi:10.1348/014466508X314891

Cheung, E. (2016, April 22). 27 per cent of Hong Kong pupils think of suicide or self-harm, 63 per cent have sleeping disorders: *Paediatric Society survey*. South China Morning Post. Retrieved from <http://www.scmp.com/news/hong-kong/health-environment/article/1938928/27-cent-hong-kong-pupils-think-suicide-or-self>

Cheung, K., & Ching, S. S. Y. (2014). Job satisfaction among nursing personnel in Hong Kong: a questionnaire survey. *Journal of Nursing Management*, 22, 664-675. doi:10.1111/j.1365-2834.2012.01475.x.

Cheung, T., & Yip, P. S. F. (2015). Depression, Anxiety and Symptoms of Stress among Hong Kong nurses: A cross-sectional study. *International Journal of Environmental Research and Public Health*, 12(9), 11072-11100. doi:10.3390/ijerph120911072

Cheung, T., & Yip, P. S. F. (2016). Self-harm in nurses: prevalence and correlates. *Journals of Advanced Nursing*. Advance online publication. doi:10.1111/jan.12987.

Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *The Journal of Alternative and Complementary Medicine*, 15(5), 593-600.

- Chu, L. -C., & Kao, H. S. R. (2005). The moderation and meditation experience and emotional intelligence on the relationship between perceived stress and negative mental health. *Chinese Journal of Psychology*, 47(2), 157-179.
- Cohen, S., Kamarack, T., & Meremmelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385-396.
- Craig, C. D., & Sprang, G. (2010). Compassion satisfaction, compassion fatigue, and burnout in a national sample of trauma treatment therapists. *Anxiety, Stress, & Coping*, 23(3), 319-339. doi:10.1080/10615800903085818.
- Daubenmier, J., Lin, J., Blackburn, E., Hecht, F. M., Kristeller, J., Maninger, N., ... Epel, E. (2012). Changes in stress, eating, and metabolic factors are related to changes in telomerase activity in a randomized mindfulness intervention pilot study. *Psychoneuroendocrinology*, 37(7), 917-928. doi:10.1016/j.psyneuen.2011.10.008.
- de Vibe, M., Solhaug, I., Tyssen, R., Friberg, O., Rosenvinge, J. H., Sørli, T., & Bjørndal, A. (2013). Mindfulness training for stress management: a randomised controlled study of medical and psychology students. *BMC medical education*, 13(1), 107.
- Delgado, C., Upton, D., Ranse, K., Furness, T., & Foster, K. (2017). Nurses' resilience and the emotional labour of nursing work: An integrative review of empirical literature. *International Journal of Nursing Studies*, 70, 71-88.



Demarzo, M., Montero-Marin, J., Puebla-Guedea, M., Navarro-Gil, M., Herrera-Mercadal, P., Moreno-González, S., ... & Garcia-Campayo, J. (2017). Efficacy of 8-and 4-session mindfulness-based interventions in a non-clinical population: a controlled study. *Frontiers in psychology*, 8, 1343. doi:10.3389/fpsyg.2017.01343.

Department of Health (2016). *2016 Health Manpower Survey on Registered Nurses*.

Retrieved from

[https://www.dh.gov.hk/english/statistics/statistics\\_hms/files/sum\\_rn16e\\_w3c.pdf](https://www.dh.gov.hk/english/statistics/statistics_hms/files/sum_rn16e_w3c.pdf)

Derksen, F., Bensing, J., & Lagro-Janssen, A. (2013). Effectiveness of empathy in general practice: a systematic review. *Br J Gen Pract*, 63(606), e76-e84.

Desrosiers, A., Klemanski, D. H., & Nolen-Hoeksema, S. (2013). Mapping mindfulness facets onto dimensions of anxiety and depression. *Behavior therapy*, 44(3), 373-384.

Desrosiers, A., Vine, V., Klemanski, D. H., and Nolen-Hoeksema, S. (2013). Mindfulness and emotion regulation in depression and anxiety: common and distinct mechanisms of action. *Depress. Anxiety* 30, 654–661.

Diedrich, A., Grant, M., Hofmann, S. G., Hiller, W., & Berking, M. (2014). Self-compassion as an emotion regulation strategy in major depressive disorder. *Behaviour Research and Therapy*, 58, 43-51.

Duarte, J., Pinto-Gouveia, J., & Cruz, B. (2016). Relationships between nurses' empathy, self-compassion and dimensions of professional quality of life: A cross-sectional study. *International Journal of Nursing Studies*, 60, 1-11.

Duarte, J., & Pinto-Gouveia, J. (2016). Effectiveness of a mindfulness-based intervention on oncology nurses' burnout and compassion fatigue syndromes: a non-randomized study. *International Journal of nursing Studies*, 64, 98-107.  
<https://doi.org/10.1016/j.ijnurstu.2016.10.002>

Duarte, J., & Pinto-Gouveia, J. (2017). Empathy and feelings of guilt experienced by nurses: A cross-sectional study of their role in burnout and compassion fatigue symptoms. *Applied Nursing Research*, 35, 42-47.  
<https://doi.org/10.1016/j.apnr.2017.02.006>

Duran, L. S. (2003). Motivating health: Strategies for the nurse practitioner. *Journal of the American Academy of Nurse Practitioners*, 15(5), 200-205.

Edwards, D., Burnard, P., Bennett, K., & Hebden, U. (2010). A longitudinal study of stress and self-esteem in student nurses. *Nursing Education Today*, 30, 78-84.  
 doi:10.1016/j.nedt.2009.06.008.

Eicher, A. C., Davis, L. W., & Lysaker, P. H. (2013). Self-compassion – A novel link with symptoms in schizophrenia? *The Journal of Nervous and Mental Disease*, 201(5), 389-393. doi:10.1097/NMD.0b013e31828e10fa.

Elliot, M. (2002) The clinical environment: a source of stress for undergraduate nurses. *Australian Journal of Advanced Nursing*, 20(1), 34–38.

- Ewais, T., Begun, J., Kenny, M., Rickett, K., Hay, K., Ajilchi, B., & Kisely, S. (2018). A systematic review and meta-analysis of mindfulness based interventions and yoga in inflammatory bowel disease. *Journal of psychosomatic research*, 116, 44-53.  
<https://doi.org/10.1016/j.jpsychores.2018.11.010>
- Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J. P. (2007). Mindfulness and emotion regulation: The development and initial validation of the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). *Journal of psychopathology and Behavioral Assessment*, 29(3), 177-190. doi:10.1007/s10862-006-9035-8
- Figley, C. R. (1995). *Compassion fatigue: Coping with secondary traumatic stress disorder*. London: Bruner-Routledge.
- Figley, C. R. (2002). Compassion fatigue: psychotherapists' chronic lack of self care. *Journal in Clinical Psychology*, 58(11), 1433-1441. doi:10.1002/jclp.10090.
- Figley, C. R., & Stamm, B. H. (1996). Psychometric review of compassion fatigue self test. In B. H. Stamm & M. D. Lutherville, *Measurement of Stress, Traumatic and Adaptation*. Sidran Press.
- Friis, A. M., Johnson, M. H., Cutfield, R. G., & Consedine, N. S. (2016). Kindness matters: a randomized controlled trial of a mindful self-compassion intervention improves depression, distress, and HbA1c among patients with diabetes. *Diabetes care*, 39(11), 1963-1971. doi: 10.2337/dc16-0416

- Galante, J., Galante, I., Bekkers, M. J., & Gallacher, J. (2014). Effect of kindness-based meditation on health and well-being: a systematic review and meta-analysis. *Journal of consulting and clinical psychology*, 82(6), 1101-1114.  
<http://dx.doi.org/10.1037/a0037249>
- Galbraith, N. D., & Brown, K. E. (2011). Assessing intervention effectiveness for reducing stress in student nurses: quantitative systematic review. *Journal of Advanced Nursing*, 67(4), 709-21. doi: 10.1111/j.1365-2648.2010.05549.x.
- Galante, J., Dufour, G., Vainre, M., Wagner, A. P., Stochl, J., Benton, A., ... & Jones, P. B. (2018). A mindfulness-based intervention to increase resilience to stress in university students (the Mindful Student Study): a pragmatic randomised controlled trial. *The Lancet Public Health*, 3(2), e72-e81.
- Gallego, J., Aguilar-Parra, J. M., Cangas, A. J., Langer, Á. I., & Mañas, I. (2014). Effect of a mindfulness program on stress, anxiety and depression in university students. *The Spanish journal of psychology*, 17, e109, 1-6.
- Gerdtz, M. F., & Nelson, S. (2007). 5-20: a model of minimum nurse-to-patient ratios in Victoria, Australia. *Journal of Nursing Management*, 15(1), 64-71.
- Germer, C. K., & Neff, K. D. (2013). Self-compassion in clinical practice. *Journal of Clinical Psychology*, 69(8), 856-867. doi:10.1002/jclp.22021.

- Gibbons, C. (2010). Stress, coping and burn-out in nursing students. *International Journal of Nursing Studies*, 47, 1299-1309. doi:10.1016/j.ijnurstu.2010.02.015.
- Gilbert, P. (2009). Introducing compassion-based therapy. *Advances in psychiatric treatment*, 15, 199-208. doi:10.1192/apt.bp.107.005264.
- Gilbert, P. (2010). An introduction to compassion focused therapy in cognitive behavior therapy. *International Journal of Cognitive Therapy*, 3, 97-112. doi:10.1521/ijct.2010.3.2.97.
- Gilbert, P., & Procter, S. (2006). Compassionate mind training for people with high shame and self-criticism: overview and pilot study of a group therapy approach. *Clinical Psychology and Psychotherapy*, 13, 353-379. doi:10.1002/cpp.507.
- Gleichgerricht, E., & Young, L. (2013). Low levels of empathic concern predict utilitarian moral judgment. *PloS one*, 8(4), e60418.
- Gordon, S., Buchanan, J., & Bretherton, T. (2008). *Safety in numbers: Nurse-to-patient ratios and the future of health care*. Ithaca: ILR Press/Cornell University Press.
- Grabovac, A. D., Lau, M. A., & Willett, B. R. (2011). Mechanisms of mindfulness: A Buddhist psychological model. *Mindfulness*, 2(3), 154-166. doi:10.1007/s12671-011-0054-5.

- Grandey, A. A. (2000). Emotional regulation in the workplace: A new way to conceptualize emotional labor. *Journal of occupational health psychology*, 5(1), 95-110.
- Grandey, A. A. (2003). When “the show must go on”: Surface acting and deep acting as determinants of emotional exhaustion and peer-rated service delivery. *Academy of management Journal*, 46(1), 86-96.
- Gregory, A. (2015). Yoga and Mindfulness Program: The Effects on Compassion Fatigue and Compassion Satisfaction in Social Workers. *Journal of Religion & Spirituality in Social Work: Social Thought*, 34(4), 372-393.  
<https://doi.org/10.1080/15426432.2015.1080604>
- Hall, A. J., Yee, L. J., & Thomas, S. L. (2002). Life course epidemiology and infectious diseases. *International Journal of Epidemiology*, 31, 300-301.
- Haukaas, R. B., Gjerde, I. B., Varting, G., Hallan, H. E., & Solem, S. (2018). A randomized controlled trial comparing the attention training technique and mindful self-compassion for students with symptoms of depression and anxiety. *Frontiers in psychology*, 9, 827. doi: 10.3389/fpsyg.2018.00827
- Harr, C., & Moore, B. (2011). Compassion fatigue among social work students in field placements. *Journal of Teaching in Social Work*, 31, 350–363.  
doi:10.1080/08841233.2011.580262

- Hawton, K., Rodham, K., Evans, E., & Weatherall, R. (2002). Deliberate self harm in adolescents: self report survey in schools in England. *British Medical Journal*, 325, 1207-11. <http://dx.doi.org/10.1136/bmj.325.7374.1207>.
- Hawton, K., Saunders, K. E. A., & O'Connor, R. C. (2012). Self-harm and suicide in adolescents. *Lancet*, 379, 2373-82. doi:10.1016/S0140-6736(12)60322-5.
- Heffernan, M., Griffin, M. T. Q., McNulty, S. R., & Fitzpatrick, J. J. (2010). Self-compassion and emotional intelligence in nurses. *International Journal of Nursing Practice*, 16, 366-373. doi:10.1111/j.1440-172X.2010.01853.x.
- Hevezi, J. A. (2016). Evaluation of a meditation intervention to reduce the effects of stressors associated with compassion fatigue among nurses. *Journal of Holistic Nursing*, 34(4), 343-350. doi: 10.1177/0898010115615981
- Hodes, G. E., Kana, V., Menard, C., Merad, M., & Russo, S. J. (2015). Neuroimmune mechanisms of depression. *Nature neuroscience*, 18(10), 1386.
- Holzel, B. K., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S. M., Gard, T., & Lazar, S. W. (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatric Research: Neuroimaging*, 191, 36-43.
- Hopper, C., Craig, J., Janvrin, D. R., Wetsel, M. A., & Reimels, E. (2010). Compassion satisfaction, burnout, and compassion fatigue among emergency nurses compared

with nurses in other selected inpatient specialties. *Journal of Emergency Nursing*, 36(5), 420-427. doi:10.1016/j.jen.2009.11.027.

Horner, J. K., Piercy, B. S., Eure, L., & Woodard, E. K. (2014). A pilot study to evaluate mindfulness as a strategy to improve inpatient nurse and patient experiences. *Applied nursing research*, 27(3), 198-201. <https://doi.org/10.1016/j.apnr.2014.01.003>

Hospital Authority (2010, May 27). *Career Progression Model for Nurses*. Retrieved from [http://www.ha.org.hk/haho/ho/cad\\_bnc/AOM-P696.pdf](http://www.ha.org.hk/haho/ho/cad_bnc/AOM-P696.pdf)

Hospital Authority (2010, July 29). *Review of Special Honorarium Scheme*. Retrieved from [http://www.ha.org.hk/haho/ho/cad\\_bnc/AOM-P712.pdf](http://www.ha.org.hk/haho/ho/cad_bnc/AOM-P712.pdf)

Hou, J., Wong, S. Y., Lo, H. H., Mak, W. W. & Ma, H. S. (2013). Validation of a Chinese version of the Five Facet Mindfulness Questionnaire in Hong Kong and development of a short form. *Assessment*, 21(3), 363-71. doi:10.1177/1073191113485121.

Hauber, K., Boon, A. E., & Vermeiren, R. (2019). Therapeutic factors that promote recovery in high-risk adolescents intensive group psychotherapeutic MBT programme. *Child and adolescent psychiatry and mental health*, 13(1), 2.

Heffernan, M., Quinn Griffin, M. T., McNulty, S. R., & Fitzpatrick, J. J. (2010). Self-compassion and emotional intelligence in nurses. *International journal of nursing practice*, 16(4), 366-373.



Huxter, M. J. (2007). Mindfulness as therapy from a Buddhist perspective. *Innovations and advances in cognitive behaviour therapy*, 43.

Information Services Department (2016, May 18). *LCQ3: Nursing manpower in public hospitals*. Retrieved from  
<http://www.info.gov.hk/gia/general/201605/18/P201605180556.htm>

International Council of Nursing (2012). The ICN Code of Ethics for Nurses. Retrieved from  
[https://www.icn.ch/sites/default/files/inline-files/2012\\_ICN\\_Codeofethicsfornurses\\_%20eng.pdf](https://www.icn.ch/sites/default/files/inline-files/2012_ICN_Codeofethicsfornurses_%20eng.pdf)

James, K., Verplanken, B., & Rimes, K. A. (2015). Self-criticism as a mediator in the relationship between unhealthy perfectionism and distress. *Personality and Individual Differences*, 79, 123-128. <http://dx.doi.org/10.1016/j.paid.2015.01.030>

Jimenez, C., Navia-Osorio, P. M., & Diaz, C. V. (2010). Stress and health in novice and experienced nursing students. *Journal of Advanced Nursing*, 66(2), 442-445.  
doi:10.1111/j.1365-2648.2009.05183.x.

Joormann, J., Dkane, M., and Gotlib, I. H. (2006). Adaptive and maladaptive components of rumination? diagnostic specificity and relation to depressive biases. *Behav. Ther.* 37, 269–280.

Jung, Y. -H., Kang, D. -H., Jang, J. H., Park, H. Y., Byun, M. S., Kwon, S. J., ... Kwon, J. S. (2010). The effects of mind-body training on stress reduction, positive affect, and

plasma catecholamines. *Neuroscience Letters*, 479, 138-142.

doi:10.1016/j.neulet.2010.05.048.

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry*, 4, 33-42.

Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York: Hyperion.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10, 144-156.

Kelly, A. C., Zuroff, D. C., Foa, C. L., & Gilbert, P. (2010). Who benefits from training in self-compassionate self-regulation? A study of smoking reduction. *Journal of Social and Clinical Psychology*, 29(7), 727-755.

Kim, J. (2018). Factors influencing nursing students' empathy. *Korean Journal of Medical Education*, 30(3), 229-236.

Kingsbury, E. (2009). *The relationship between empathy and mindfulness: Understanding the role of self-compassion*. ProQuest Information & Learning.

- Klonsky, E. D., May, A. M., & Glenn, C. R. (2013). The relationship between nonsuicidal self-injury and attempted suicide: Converging evidence from four samples. *Journal of abnormal psychology, 122*(1), 231-237.
- Ko, C. M., Grace, F., Chavez, G. N., Grimley, S. J., Dalrymple, E. R., & Olson, L. E. (2018). Effect of seminar on compassion on student self-compassion, mindfulness and well-being: A randomized controlled trial. *Journal of American college health, 66*(7), 537-545.
- Kraus, S., & Sears, S. (2009). Measuring the immeasurables: Development and initial validation of the Self-Other Four Immeasurables (SOFI) scale based on Buddhist teachings on loving kindness, compassion, joy, and equanimity. *Social Indicators Research, 92*, 169-181. doi:10.1007/s11205-008-9300-1.
- Krygier, J. R., Heathers, J. A. J., Shahrestani, S., Abbott, M., Gross, J. J., & Kemp, A. H. (2013). Mindfulness meditation, well-being, and heart rate variability: A preliminary investigation into the impact of intensive Vipassana meditation. *International Journal of Psychophysiology, 89*, 305-313.
- Kumar, S., Feldman, G., & Hayes, A. (2008). Changes in mindfulness and emotion regulation in an exposure-based cognitive therapy for depression. *Cognitive Therapy and Research, 32*(6), 734. doi:10.1007/s10608-008-9190-1
- Kwok, P. (2004). Examination-oriented knowledge and value transformation in East Asian cram schools. *Asia Pacific Education Review, 5*(1), 64-75.

- Kyeong, L. W. (2013). Self-compassion as a moderator of the relationship between academic burn-out and psychological health in Korean cyber university students. *Personality and Individual Differences*, 54, 899-902. <http://dx.doi.org/10.1016/j.paid.2013.01.001>
- Labrague, L. J. (2013). Stress, stressors, and stress responses of student nurses in a government nursing school. *Health Science Journal*, 7(4), 424-435.
- Lagopoulos, J., Xu, J., Rasmussen, I., Vik, A., Malhi, G. S., Eliassen, C. F., ... Ellingsen, Ø. (2009). Increased theta and alpha EEG activity during nondirective meditation. *The Journal of alternative and Complementary Medicine*, 15(11), 1187-1192.  
doi:10.1098/acm.2009.0113.
- Lam, D., Schuck, N., Smith, N., Farmer, A., & Checkley, S. (2003). Response style, interpersonal difficulties and social functioning in major depressive disorder. *Journal of Affective Disorders*, 75(3), 279-283.
- Leach, M. J. (2005). Rapport: A key to treatment success. *Complementary therapies in clinical practice*, 11(4), 262-265.
- Lee, C. H., & Giuliani, F. (2019). The role of inflammation in depression and fatigue. *Frontiers in immunology*, 10, 1696.
- Leigh, J., Bowen, S., & Marlatt, G. A. (2005). Spirituality, mindfulness and substance abuse. *Addictive Behaviors*, 30, 1335–1341. doi:10.1016/j.addbeh.2005.01.010.

- Lomas, T., Ivtzan, I., & Fu, C. H. Y. (2015). A systematic review of neurophysiology of mindfulness on EEG oscillations. *Neuroscience and*
- Leung, Y. P., Lam, T. –H., & Chan, S. S. C. (2010). Three versions of Perceived Stress Scale: validation in a sample of Chinese cardiac patients who smoke. *BMC Public Health*, 10, 513. <http://www.biomedcentral.com/1471-2458/10/513>
- López, A., Sanderman, R., Smink, A., Zhang, Y., van Sonderen, E., Ranchor, A., & Schroevers, M. J. (2015). A reconsideration of the Self-Compassion Scale's total score: self-compassion versus self-criticism. *PloS one*, 10(7), e0132940.
- Lown, B. A., Rosen, J., & Marttila, J. (2011). An agenda for improving compassionate care: a survey shows about half of patients say such care is missing. *Health Affairs*, 30(9), 1772-1778.
- Luders, E., Toga, A. W., Lepore, N., & Gaser, C. (2009). The underlying anatomical correlates of long-term meditation: Larger hippocampal and frontal volumes of gray matter. *NeuroImage*, 45, 672-678.
- Lutz, A., Greischar, L. L., Rawlings, N. B., Ricard, M., & Davidson, R. J. (2004). Long-term meditators self-induced high-amplitude gamma synchrony during mental practice. *Proceedings of the National Academy of Sciences*, 101(46), 16369–16373. <http://www.pnas.orgcgidoi10.1073pnas.0407401101>

- Lutz, J., Herwig, U., Opialla, S., Hittmeyer, A., Jäncke, L., Rufer, M., ... Brühl, A. B. (2014). Mindfulness and emotion regulation – an fMRI study. *Social Cognitive and Affective Neuroscience*, 9(6), 776-785. doi:10.1093/scan/nst043.
- MacKay, R., Hughes, J., & Carver, E. (1990). *Empathy in the Helping Relationship*. Springer Publishing: New York.
- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review*, 32, 545-552. doi:10.1016/j.cpr.2012.06.003.
- Manotas, M., Segura, C., Eraso, M., Oggins, J., & McGovern, K. (2014). Association of brief mindfulness training with reductions in perceived stress and distress in Colombian health care professionals. *International Journal of Stress Management*, 21(2), 207.
- Mantzios, M., & Wilson, J. C. (2015). Exploring mindfulness and mindfulness with self-compassion-centred interventions to assist weight loss: Theoretical considerations and Preliminary results of a randomized pilot study. *Mindfulness*, 6, 824-835. doi:10.1007/s12671-014-0325-z.
- Marshall, M. B., Zuroff, D., McBride, C., & Bagby, R. M. (2008). Self-criticism predicts differential response to treatment for major depression. *Journal of Clinical Psychology*, 64, 231e244. <http://dx.doi.org/10.1002/jclp.20438>.

- Martins, D., Nicholas, N. A., Shaheen, M., Jones, L., & Norris, K. (2013). The development and evaluation of a compassion scale. *Journal of health care for the poor and underserved*, 24(3), 1235-1246. doi:10.1353/hpu.2013.0148
- McEwen, B. S., Bowles, N. P., Gray, J. D., Hill, M. N., Hunter, R. G., Karatsoreos, I. N., & Nasca, C. (2015). Mechanisms of stress in the brain. *Nature neuroscience*, 18(10), 1353.
- McCraty, R., & Shaffer, F. (2015). Heart rate variability: New perspectives on physiological mechanisms, assessment of self-regulatory capacity, and health risk. *Global Advances in Health and Medicine*, 4(1), 46-61. doi:10.7453/gahmj.2014.073.
- McVicar, A. (2003). Workplace stress in nursing: a literature review. *Journal of Advanced Nursing*, 44(6), 633-642.
- Mercer, S. W., & Reynolds, W. J. (2002). Empathy and quality of care. *British Journal of General Practice*, 52, S9-S13.
- Melissa-Halikiopoulou, C., Tsiga, E., Khachatryan, R., & Papazisis, G. (2011). Suicidality and depressive symptoms among nursing students in north Greece. *Health Science Journal*, 5, 90-97.
- Morse, J., Anderson, G., Botter, J., Yonge, O., Obrien, B., & Solberg, S. (1992). Exploring empathy: a conceptual fit for nursing practice? *Image: Journal of Nursing Scholarship*, 24(4), 273-280.

- Moran, P., Coffey, C., Romaniuk, H., Olsson, C., Borschmann, R., Carlin, J. B., & Patton, G. C. (2012). The natural history of self-harm from adolescence to young adulthood: a population-based cohort study. *Lancet*, 379, 236-43. doi:10.1016/S0140-6736(11)61141-0.
- Moridi, G., Khaledi, S., & Valiee, S. (2014). Clinical training stress-inducing factors from the students' viewpoint: A questionnaire-based study. *Nurse education in practice*, 14(2), 160-163.
- Murata, T., Takahashi, T., Hamada, T., Omori, M., Kosaka, H., Yoshida, H., & Wada, Y. (2004). Individual trait anxiety levels characterizing the properties of Zen meditation. *Neuropsychobiology*, 50, 189-194. doi:10.1159/000079113.
- Nakai, M., Chen, D. G., Nishimura, K., & Miyamoto, Y. (2014). Comparative study of four methods in missing value imputations under missing completely at random mechanism. *Open Journal of Statistics*, 4(01), 27-37.
- Neff, K. D. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, 2, 85-101.
- Neff, K. D. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identity*, 2, 223-250.



- Neff, K. D., & Germer, C. K. (2012). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology*, 00,1-17.  
doi:10.1002/jclp.21923.
- Neff, K. D., & McGehee, P. (2010). Self-compassion and psychological resilience among adolescents and young adults. *Self and Identity*, 9, 225-240.  
doi:0.1080/15298860902979307.
- Neff, K. D., Rude, S. S., & Kirkpatrick, K. L. (2007). An examination of self-compassion in relation to positive psychological functioning and personality traits. *Journal of Research in Personality*, 41, 908-916. doi:10.1016/j.jrp.2006.08.002.
- New South Wales Nurses and Midwives' Association. (2016, June 28). *Ratios now law in Queensland*. Retrieved from <http://www.nswnma.asn.au/ratios-now-law-in-queensland/>
- Nimmo, A., & Huggard, P. (2013). A systematic review of the measurement of compassion fatigue, vicarious trauma, and secondary traumatic stress in physicians. *Australian Journal of Disaster and Trauma Studies*, 2013-1, 37-44.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of abnormal psychology*, 109(3), 504-511.
- Nursing and Midwifery Board of Australia (2008). *Code of Ethics for Nurses in Australia*.  
Nursing and Midwifery Board of Australia. Retrieved from

<https://www.nursingmidwiferyboard.gov.au/documents/default.aspx?record=WD10%2F1352&dbid=AP&chksum=GTNolhwLC8InBn7hiEFeag%3D%3D>

Pang, D., & Ruch, W. (2019). Scrutinizing the Components of Mindfulness: Insights from Current, Past, and Non-meditators. *Mindfulness*, 10(3), 492-505.

Parmentier, F. B., García-Toro, M., García-Campayo, J., Yañez, A. Ñ., Andrés, P., & Gili-Planas, M. (2019). Mindfulness and symptoms of depression and anxiety in the general population: The mediating roles of worry, rumination, reappraisal and suppression. *Frontiers in psychology*, 10, 506.

Patel, A. (2013). The role of inflammation in depression. *Psychiatr Danub*, 25(Suppl 2), S216-23.

Patterson, C. (1974). *Relationship Counselling and Psychotherapy*. Harper & Row: New York.

Peate, I. (2014). Compassion fatigue: the toll of emotional labour. *British Journal of Nursing*, 23(5), 251.

Perry, B., Tonffer, G., Merrick, T., & Dalton, J. (2011). An exploration of the experience of compassion fatigue in clinical oncology nurses. *Canadian Oncology Nursing Journal*, 21(2), 91-105. doi:10.5737/1181912x2129197.

Pew Research Center (2018). *Social media use in 2018*. Retrieved from

<https://www.pewresearch.org/internet/2018/03/01/social-media-use-in-2018/>

Phillipson, S., & Lam, B. (2011). *Learning and Teaching in the Chinese Classroom:*

*Responding to Individual Needs*. Hong Kong University Press. Retrieved from

[www.jstor.org/stable/j.ctt1xwh1g](http://www.jstor.org/stable/j.ctt1xwh1g)

Polit, D. F., & Beck, C. T. (2008). Is there gender bias in nursing research? *Research in*

*Nursing & Health, 31*, 417-427.

Polit, D. F., & Beck, C. T. (2013). Is there gender bias in nursing research? An update.

*Research in Nursing & Health, 36*, 75-83.

Potter, P., Deshields, T., Berger, J. A., Clarke, M., Olsen, S., & Chen, L. (2013). Evaluation

of a compassion fatigue resiliency program for oncology nurses. *Oncology Nursing*

*Forum, 40*(2), 180-187.

Potter, P., Deshields, T., Divanbeigi, J., Berger, J., Cipriano, D., Norris, L., & Olsen, S.

(2010). Compassion fatigue and burnout: prevalence among oncology nurses. *Clinical*

*Journal of Oncology Nursing, 14*(5), E56-E62. doi:10.1188/10.CJON.E56-E62.

Pryor, L., Da Silva, M. A., & Melchior, M. (2017). Mental health and global strategies to

reduce NCDs and premature mortality. *The Lancet Public Health, 2*(8), e350-e351.

Pulido-Martos, M., Augusto-Landa, J. M., & Lopez-Zafra, E. (2012). Source of stress in nursing students: a systematic review of quantitative studies. *International Nursing Review*, 59, 15-25. doi:10.1111/j.1466-7657.2011.00939.x.

Querstret, D., Cropley, M., & Fife-Schaw, C. (2017). Internet-based instructor-led mindfulness for work-related rumination, fatigue, and sleep: Assessing facets of mindfulness as mechanisms of change. A randomized waitlist control trial. *Journal of Occupational Health Psychology*, 22(2), 153-169.  
<http://dx.doi.org/10.1037/ocp0000028>

Querstret, D., Cropley, M., & Fife-Schaw, C. (2018). The Effects of an Online Mindfulness Intervention on Perceived Stress, Depression and Anxiety in a Non-clinical Sample: A Randomised Waitlist Control Trial. *Mindfulness*, 9(6), 1825-1836.  
<https://doi.org/10.1007/s12671-018-0925-0>

Raab, K. (2014). Mindfulness, self-compassion, and empathy among health care professionals: A review of the literature. *Journal of Health Care Chaplaincy*, 20, 95-108. doi:10.1080/08854726.2014.913876.

Randal, C., Pratt, D., & Bucci, S. (2015). Mindfulness and self-esteem: a systematic review. *Mindfulness*, 6(6), 1366-1378.

Reeve, K. L., Shumaker, C. J., Yearwood, E. L., Crowell, N. A., & Riley, J. B. (2013). Perceived stress and social support in undergraduate nursing students' educational experiences. *Nurse education today*, 33(4), 419-424.

- Ressler, K. J. (2010). Amygdala activity, fear, and anxiety: modulation by stress. *Biological psychiatry*, 67(12), 1117-1119.
- Reynard, A., Gevirtz, R., Berlow, R., Brown, M., & Boutelle, K. (2011). Heart rate variability as a marker of self-regulation. *Applied Psychophysiology and Biofeedback*, 36(3), 209-215. doi:10.1007/s10484-011-9162-1.
- Reynolds, W. J., & Scott, B. (1999). Empathy: a crucial component of the helping relationship. *Journal of Psychiatric and Mental Health Nursing*, 6, 363-370.
- Rogers, C. R. (1975). Empathic: an unappreciated way of being. *Counselling Psychologist*, 2, 2-10.
- Rosenzweig, D. (2013). The sisters of mindfulness. *Journal of Clinical Psychology*, 69(8), 793-804. doi:10.1002/jclp.22015
- Rudman, A., & Gustavsson, J. P. (2012). Burnout during nursing education predicts lower occupational preparedness and future clinical performance: A longitudinal study. *Internal Journal of Nursing Studies*, 49, 988-1001.  
<http://dx.doi.org/10.1016/j.ijnurstu.2012.03.010>
- Segal, Z., Teasdale, J., & Williams, M. (2002). *Mindfulness-based cognitive therapy for depression*. New York, NY: Guilford Press.

- Segerstrom, S. C., & Nes, L. S. (2007). Heart rate variability reflects self-regulatory strength, effort, and fatigue. *Psychological Science*, 18(3), 275-281.
- Segerstrom, S. C., Tsao, J. C., Alden, L. E., & Craske, M. G. (2000). Worry and rumination: Repetitive thought as a concomitant and predictor of negative mood. *Cognitive therapy and Research*, 24(6), 671-688.
- Shahar, B., Szepsenwol, O., Zilcha-Mano, S., Haim, N., Zamir, O., Levi-Yeshuvi, S., & Levit-Binnun, N. (2015). A wait-list randomized controlled trial of loving-kindness meditation program for self-criticism. *Clinical psychology & psychotherapy*, 22(4), 346-356.
- Shapira, L. B., & Mongrain, M. (2010). The benefits of self-compassion and optimism exercises for individuals vulnerable to depression. *The Journal of Positive Psychology*, 5(5), 377-389. doi:10.1080/17439760.2010.516763.
- Shapiro, D. H. (1992). A preliminary study of long-term meditators: goals, effects, religious orientation, cognitions. *The Journal of Transpersonal Psychology*, 24(1), 23-39.
- Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, 62(3), 373-386. doi:10.1002/jclp.20237
- Skegg, K. (2005). Self-harm. *Lancet*, 366, 1471-83. [http://dx.doi.org/10.1016/S0140-6736\(05\)67600-3](http://dx.doi.org/10.1016/S0140-6736(05)67600-3)

- Shonin, E., Van Gordon, W., Compare, A., Zangeneh, M., & Griffiths, M. D. (2015). Buddhist-derived loving-kindness and compassion meditation for the treatment of psychopathology: A systematic review. *Mindfulness*, 6(5), 1161-1180. doi:10.1007/s12671-014-0368-1.
- Singer, T., & Klimecki, O. M. (2014). Empathy and compassion. *Current Biology*, 24(18), R875-R878.
- Smeets, E., Neff, K., Alberts, H., & Peters, M. (2014). Meeting suffering with kindness: Effects of a brief self-compassion intervention for female college students. *Journal of Clinical Psychology*, 70(9), 794-807. doi:10.1002/jclp.22076.
- Smith, G. D., & Yang, F. (2017). Stress, resilience and psychological well-being in Chinese undergraduate nursing students. *Nurse Education Today*, 49, 90-95.
- Spetz, J. (2004). California's minimum nurse-to-patient ratios: The first few months. *Journal of Nursing Administration*, 34(12), 571-578.
- Stamm, B.H. (2010). *The Concise ProQOL Manual*. Pocatello, ID: ProQOL.org.
- Sturman, E., & Mongrain, M. (2005). Self-criticism and major depression: an evolutionary perspective. *British Journal of Clinical Psychology*, 44, 505-519. <http://dx.doi.org/10.1348/014466505X35722>.

Swift, J. K., & Greenberg, R. P. (2012). Premature discontinuation in adult psychotherapy: a meta-analysis. *Journal of Consulting and Clinical Psychology, 80*, 547-559.

<http://doi.org/10.1037/a0028226>.

Takahashi, T., Murata, T., Hamada, T., Omori, M., Kosaka, H., Kikuchi, M., Yoshida, H., & Wada, Y. (2005). Changes in EEG and autonomic nervous activity during meditation and their association with personality traits. *International Journal of Psychophysiology, 55*(2), 199-207.

Tanaka, M., Wekerle, C., Schmuck, M. L., Paglia-Boak, A., & The MAP Research Team (2011). The linkages among childhood maltreatment, adolescent mental health, and self-compassion in child welfare adolescents. *Child Abuse & Neglect, 35*, 887-898. doi:10.1016/j.chiabu.2011.07.003.

Tang, Y. Y., Lu, Q., Fan, M., Yang, Y., & Posner, M. I. (2012). Mechanisms of white matter changes induced by meditation. *PNAS, 109*(26), 10570-10574.

Tevington, P. (2011). Mandatory nurse-patient ratios. *Medsurg Nursing, 20*(50), 265-268.

The Hong Kong Jockey Club Centre for Suicide Research and Prevention. (2015). 1981-2014 *Hong Kong Suicide Statistics*. Retrieved from <http://csrp.hku.hk/statistics/>

The University of Hong Kong (2012, Sep 11). *World Suicide Prevention Day 2012 "Lighting up hope in the workplace"* HKU Centre for Suicide Research and Prevention releases



*research findings on employed people suicide*. Retrieved from

[http://www.hku.hk/press/news\\_detail\\_8488.html](http://www.hku.hk/press/news_detail_8488.html)

Thierry, K. L., Bryant, H. L., Nobles, S. S., & Norris, K. S. (2016). Two-year impact of a mindfulness-based program on preschoolers' self-regulation and academic performance. *Early Education and Development*, 27(6), 805-821.

Timmins, F., Corroon, A. M., Byrne, G., & Mooney, B. (2011). The challenge of contemporary nurse education programmes. Perceived stressors of nursing students: mental health and related lifestyle issues. *Journal of Psychiatric and Mental Health Nursing*, 18(9), 758-766.

Travis, F. (2001). Autonomic and EEG patterns distinguish transcending from other experiences during transcendental meditation practice. *International Journal of Psychophysiology*, 42, 1-9.

Travis, F., Tecce, J., Arenander A., & Wallace, R. K. (2002). Patterns of EEG coherence, power, and contingent negative variation characterize the integration of transcendental and waking states. *Biological Psychology*, 61, 293-319.

Travis, F., & Wallace, R. K. (1999). Autonomic and EEG patterns during eyes-closed and rest and transcendental meditation (TM) practice: The basis for a neural model of TM practice. *Consciousness and Cognition*, 8, 302-318.

- Van Dam, N. T., Earleywine, M., & Borders, A. (2010). Measuring mindfulness? An item response theory analysis of the Mindful Attention Awareness Scale. *Personality and Individual Differences, 49*(7), 805-810. doi:10.1016/j.paid.2010.07.020
- Van Dam, N. T., Sheppard, S. C., Forsyth, J. P., & Earleywine, M. (2011). Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression. *Journal of Anxiety Disorders, 25*, 123-130.
- Vestergaard-Poulsen, P., van Beek, M., Skewes, J., Bjarkam, C. R., Stubberup, M., Bertelsen, J., & Roepstorff, A. (2009). Long-term meditation is associated with increased gray matter density in the brain stem. *NeuroReport, 20*, 170-174.
- Vlastelica, M., Pavlović, S., & Urlić, I. (2003). Patients' ranking of therapeutic factors in group analysis. *Collegium antropologicum, 27*(2), 779-788.
- Walach, H., Buchheld, N., Buittenmuller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness – the Freiburg Mindfulness Inventory (FMI). *Personality and Individual Differences, 40*, 1543-1555. doi:10.1016/j.paid.2005.11.025
- Warren, R., Smeets, E., & Neff, K. (2016). Self-criticism and self-compassion: risk and resilience: being compassionate to oneself is associated with emotional resilience and psychological well-being. *Current Psychiatry, 15*(12), 18-28.

- Watson, R., Deary, I., Thompson, D., & Li, G. (2008). A study of stress and burnout in nursing students in Hong Kong: A questionnaire survey. *International Journal of Nursing Studies*, 45, 1534-1542. doi:10.1016/j.ijnurstu.2007.11.003.
- Wentzel, D.L., & Brysiewicz, P. (2018). A survey of compassion satisfaction, burnout and compassion fatigue in nurses practicing in three oncology departments in Durban, South Africa. *International Journal of Africa Nursing Sciences*, 8, 82-86.
- Williams, C. (1990). Biopsychosocial element of empathy: a multidimensional model. *Issues in Mental Health Nursing*, 11, 155-174.
- Williams, J., & Stickley, T. (2010). Empathy and nurse education. *Nurse Education Today*, 30, 752-755. doi:10.1016/j.nedt.2010.01.018.
- Wong, D. F. K., Leung, S. S. K., So, C. K. O., & Lam, D. O. B. (2001). Mental Health of Chinese Nurses in Hong Kong: The Roles of Nursing Stresses and Coping Strategies. *The Online Journal of Issues in Nursing*, 6, no.2. Retrieved from <http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume62001/No2May01/ArticlePreviousTopic/MentalHealthofChineseNursesinHongKong.aspx>
- Woodruff, S. C., Glass, C. R., Arnkoff, D. B., Crowley, K. J., Hindman, R. K., & Hirschhorn, E. W. (2014). Comparing Self-Compassion, Mindfulness, and Psychological Inflexibility as Predictors of Psychological Health. *Mindfulness*, 5(4), 410-421. doi:10.1007/s12671-013-0195-9.

World Health Organization (WHO, 1946). *Constitution of the World Health Organization*.

Geneva: World Health Organization.

World Health Organization (WHO, 2000). *The implications for training of embracing: A life course approach to health*. Retrieved from

[http://www.who.int/ageing/publications/lifecourse/alc\\_lifecourse\\_training\\_en.pdf](http://www.who.int/ageing/publications/lifecourse/alc_lifecourse_training_en.pdf)

World Health Organization (WHO, 2002). *Active ageing: A policy Framework*. Retrieved

from [http://whqlibdoc.who.int/hq/2002/who\\_nmh\\_nph\\_02.8.pdf](http://whqlibdoc.who.int/hq/2002/who_nmh_nph_02.8.pdf)

World Health Organization (WHO, 2005). *Promoting mental health; concepts, emerging evidence and practice*. Retrieved from

[http://whqlibdoc.who.int/publications/2005/9241562943\\_eng.pdf?ua=1](http://whqlibdoc.who.int/publications/2005/9241562943_eng.pdf?ua=1)

World Health Organization (WHO, 2010). *A conceptual framework for action on the social determinants of health. Social determinants of health discussion paper 2*. Retrieved from

[http://www.who.int/sdhconference/resources/ConceptualframeworkforactiononSDH\\_eng.pdf](http://www.who.int/sdhconference/resources/ConceptualframeworkforactiononSDH_eng.pdf)

World Health Organization (WHO, 2012). *Global burden of mental disorders and the need of for a comprehensive, coordinated response from health and social sectors at country level*. Retrieved from

[http://apps.who.int/gb/ebwha/pdf\\_files/WHA65/A65\\_10-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA65/A65_10-en.pdf)

World Health Organization (WHO, 2014a). Preventing suicide – a global imperative.

Retrieved from [http://www.who.int/mental\\_health/suicide-prevention/world\\_report\\_2014/en/](http://www.who.int/mental_health/suicide-prevention/world_report_2014/en/)

World Health Organization (WHO, 2014b). *Mental Health: a state of well-being*. Retrieved

from [http://www.who.int/features/factfiles/mental\\_health/en/](http://www.who.int/features/factfiles/mental_health/en/)

World Health Organization (WHO, 2015). *Noncommunicable diseases*. Retrieved from

<http://www.who.int/mediacentre/factsheets/fs355/en/>

World Health Organization (WHO, n.d.). *Environment and health in developing countries*.

Retrieved from <http://www.who.int/heli/risks/ehindevcoun/en/>

Yalom, I. D. (1995). *The theory and practice of group psychotherapy*. (4<sup>th</sup> ed.). New York: Basic Books.

Ying, Y. -W. (2009). Contribution of self-compassion to competence and mental health in social work students. *Journal of Social Work Education*, 45(2), 309-323.

Yoder, E. A. (2010). Compassion fatigues in nurses. *Applied Nursing Research*, 23, 191-197.

doi:10.1016/j.apnr.2008.09.003.

Zänkert, S., Bellingrath, S., Wüst, S., & Kudielka, B. M. (2019). HPA axis responses to psychological challenge linking stress and disease: What do we know on sources of intra-and interindividual variability?. *Psychoneuroendocrinology*, *105*, 86-97.

Zapf, D. (2002). Emotion work and psychological well-being: A review of the literature and some conceptual considerations. *Human resource management review*, *12*(2), 237-268.

Zellmer, D. D. (2004). Teaching to Prevent Burnout in the Helping Professions. *Analytical Teaching*, *24*(1), 20-25.

Zenner, C., Herrnleben-Kurz, S., & Walach, H. (2014). Mindfulness-based interventions in schools—a systematic review and meta-analysis. *Frontiers in psychology*, *5*, 603.

## List of appendices

### Appendix A Information Sheet (English)

#### INFORMATION SHEET

##### **Using mindful self-compassion (MSC) as a strategy to reduce stress and develop self-compassion in nursing students**

You are invited to participate in a project supervised by Prof. Chung Wai Yee Joanne and conducted by Mr. Tung Ling Ngai Fabian, who are staff / student of the Department of Health and Physical Education in The Education University of Hong Kong.

The aim of the study is to investigate the effect of mindful self-compassion (MSC) course on registered nurse (RN) students' stress level, mindfulness level and self-compassion level. Nursing students suffered from stress during pre-registration training. Stress and burnout during training not only cause physiological and psychological symptoms, but also are highly affected future occupational preparedness and clinical competence. Mindful self-compassion (MSC) is a new self-compassion-based intervention. By introducing techniques to cultivate mindfulness and self-compassion, participants not only learn how to reappraise stressors and experience with nonjudgmental and nonreactive awareness, but at the same time also be able to care for their experience by offering compassion to oneself.

The study will recruit 50 participants in total. Participants will be recruited by convenience sampling through advertisement in the Internet. Candidates who are interested in the study can submit their personal information, including name, mobile number, and email, via email or Google Form. The collected personal information will only be used for the contact issues for the course and for the study.

The MSC course consists of 8 sessions of 3-hour weekly practice, 1 session of half-day retreat, and 30 minutes of daily self-practice. The whole study will last for 12 weeks and 20 weeks for intervention group and wait-list control group respectively. Participants in intervention group will join the MSC course first (week 0). After completion of the course, the course will be conducted to participants in waitlist control group (week 8). For intervention group, data will be collected before the course (week 0), in the middle of the course (week 4), after completion of the course (week 8), and 4 weeks after completion of the course (week 12). For wait-list control group, data will be collected at week 0, week 4, week 8, week 12, week 16 and week 20. Each data collection would take around 30 minutes. Participants will be invited to fill in questionnaires.

Your participation in the project is voluntary. You have every right to withdraw from the study at any time without negative consequences. All information related to you will remain confidential, and will be identifiable by codes known only to the researcher.

Participants should have no significant risk. Few participants may have minimal risk of psychological responses, such as agitation, sleepiness, sadness, and anger. These changes are not common and are usually temporary. This can be prevented as the course is delivered by a trained, qualified and experienced tutor. The tutor will minimize the risk by adjusting

the practice's intensity, identifying any psychological issues of participants during the lesson, and giving clear instruction on practice.

The results of the study will be disseminated in thesis report, presentation, and journal articles. Researchers will inform the participants the key findings of the study after completion of the whole project.

If you would like to obtain more information about this study, please contact Mr. Tung Ling Ngai Fabian at telephone number \_\_\_\_\_ or his supervisor Prof. Chung Wai Yee Joanne at telephone number \_\_\_\_\_.

If you have any concerns about the conduct of this research study, please do not hesitate to contact the Human Research Ethics Committee by email at [hrec@eduhk.hk](mailto:hrec@eduhk.hk) or by mail to Research and Development Office, The Education University of Hong Kong.

Thank you for your interest in participating in this study.

Tung Ling Ngai Fabian  
Principal Investigator



## Appendix B Consent Form (English)

**THE EDUCATION UNIVERSITY OF HONG KONG**  
**Department of Health and Physical Education****CONSENT TO PARTICIPATE IN RESEARCH****Using mindful self-compassion (MSC) as a strategy to reduce stress and develop self-compassion in nursing students**

I \_\_\_\_\_ hereby consent to participate in the captioned research supervised by Prof. Chung Wai Yee Joanne and conducted by Mr. Tung Ling Ngai (Fabian).

I understand that information obtained from this research may be used in future research and may be published. However, my right to privacy will be retained, i.e., my personal details will not be revealed.

The procedure as set out in the **attached** information sheet has been fully explained. I understand the benefits and risks involved. My participation in the project is voluntary.

I acknowledge that I have the right to question any part of the procedure and can withdraw at any time without negative consequences.

Name of participant

Signature of participant

Date

---

---

---

## Appendix C Demographic data collection sheet

Ref: \_\_\_\_\_

**Mindful Self-compassion****Demographic data**Sex: ☐ male ☐ female

Age: \_\_\_\_\_

Educational level: ☐ Secondary school ☐ Higher diploma/ Associate ☐ Bachelor ☐ MasterMarital Status: ☐ Single ☐ Married ☐ Divorced ☐ Widower/Widow

Institute: \_\_\_\_\_

Year of study: \_\_\_\_\_

Program Studying: \_\_\_\_\_

Number of weeks in nursing practicum: \_\_\_\_\_

## Appendix D Questionnaire: Chinese PSS

**The Chinese version of the Perceived Stress Scale**

以下問題是問關於你上個月的感受和想法。每一條題目都是問你“幾經常”有所描述的感受和想法。雖然有些題目意思看來十分相近，其實它們是不同的。你應視它們為獨立的題目作答。最適合的方法是盡快回答每條問題。不用準確計算次數的多少，只要作出合理的估計。

	絕對 不會	大概 不會	有時 會	經常 會	十分 經常會
1. 上個月你有幾經常對某些突然發生的事情感到不安？	0	1	2	3	4
2. 上個月你有幾經常感覺到總是沒法控制生活上重要的事？	0	1	2	3	4
3. 上個月你有幾經常感覺到焦慮和壓力？	0	1	2	3	4
4. 上個月在處理個人問題之能力方面，你有幾經常感到充滿信心？	0	1	2	3	4
5. 上個月你有幾經常感覺到事事順利？	0	1	2	3	4
6. 上個月你有幾經常發現你是沒法處理各樣應要做的事？	0	1	2	3	4
7. 上個月你有幾經常能控制生活上之煩燥？	0	1	2	3	4
8. 上個月你有幾經常感到事事駕輕就熟？	0	1	2	3	4
9. 上個月你有幾經常對某些屬於你控制範圍以外的事而發怒？	0	1	2	3	4
10. 上個月你有幾經常感覺到有很多困難而未能克服？	0	1	2	3	4

## Appendix E Questionnaire: SCS-C

編號: \_\_\_\_\_ 日期: \_\_\_\_\_

## 自我疼惜量表

在困難時刻我一般如何對待自己

回答前請小心閱讀每一條題目。量表從 1 到 5，1 代表“差不多從不會”，5 代表“差不多每次都會”。請於題目最左方填上最能代表你的數字。

差不多從不會

1

2

3

4

差不多每次都會

5

1.	我不滿和愛批評自己的過錯和不足。
2.	當我情緒低落時，我會困擾和固定注視在所有錯處上。
3.	當四週的事情發生得十分差勁，我會覺得困難是人生的一部份，每個人都會經歷過的。
4.	當我想到自己的不足，我會感到自己跟這個世界十分疏離和斷絕一切。
5.	當我情緒上感到痛楚，我會嘗試愛惜自己。
6.	當我未能達成對我重要的事項時，我會完全被不足感吞噬。
7.	當我情緒低落和不想見人時，我會提醒自己有好多人的感受跟我一樣。
8.	當我在困境時，我會對自己苛刻。
9.	當有事情令我心煩不快，我會嘗試保持情緒平衡。
10.	當我感到某些方面不足，我會提醒自己很多人也有這個不足的感覺。
11.	我對自己某方面不喜歡的性格是不能忍受和沒有耐性。
12.	當我經歷困境時，我會為自己提供所需的關心和關顧。
13.	當我感到低落時，我會覺得其他人都比我快樂。
14.	當有痛苦發生時，我會採取一個平衡的看法。
15.	我會覺得失敗是人生的一部份。
16.	當我看到自己的不足之處，我會不斷批評自己。
17.	當我未能達成對我重要的事項時，我會以開放態度對待。
18.	當我在努力掙扎時，我會覺得其他人一定過得比較容易。
19.	當我經歷痛苦時，我會對自己仁慈。
20.	當有事情令我心煩時，我的情緒會被牽動。
21.	當我經歷痛苦時，我可以冷漠無情地對自己。
22.	當我情緒低落時，我會用好奇和開放的態度面對自己的感受。
23.	我可以寬容的態度來面對自己的錯處和不足。
24.	當有痛苦的事情發生，我會把事情小題大做。
25.	當我未能達成對我重要的事項時，我覺得我是獨個兒承擔這個失敗。
26.	我會以諒解和耐心對待自己不喜歡的個性。

## 慈心滿意與慈心疲倦

當您[幫助]別人時，會直接接觸到他人的生活。您可能因此曾經經驗過正面及負面的影響。下列問題是有關您身為[助人者]時所經歷過的正面及負面經驗。請依據您自己及目前的工作狀況，來回答下列的問題。請誠實地填選出最符合您在過去 30 天中所經歷過的情況。

5=總是如此

1. 我是快樂的。
2. 我腦中常充滿了一個以上我所[幫助]過的人。
3. [幫助]人讓我得到滿足感。
4. 我覺得和其他人有所連繫。
5. 突如其來的聲響會讓我感到驚嚇。
6. 與需要被我[幫助]的人一起後，讓我感到神采奕奕。
7. 我發現要將我的個人生活與[助人]工作分開來是困難的。
8. 因為在[幫助]有嚴重創傷經驗的人時會睡得不好，所以我的工作效率會較差。
9. 我想我已經被這些我所[幫助]的嚴重創傷者所影響。
10. 從事[助人]的工作讓我感到陷入困境。
11. 因為我的[助人工作]，讓我對很多事情感到緊張。
12. 我喜歡從事[助人]的工作。
13. 我所[幫助]的嚴重創傷經驗者讓我感到沮喪。
14. 我覺得我彷彿經歷了那些我曾經[幫助]的嚴重創傷者有過的創傷。
15. 我有信念支持著我。
16. 我對於自己如何能夠把[助人]的工作技巧與計劃保持進度感到滿意。
17. 我是我想要成為的人。
18. 我的工作使我感到滿意。
19. 我覺得筋疲力竭，因為我的工作是一個[助人者]。
20. 對於那些我[幫助]的人和我是如何可以幫助他們，我有開心的想法和感覺。
21. 我覺得很受不了，因為我的[工作]負擔似乎沒有止盡。
22. 我相信透過我所做的，可以讓事情變得不同。
23. 我避免某些活動或情況，因為它們讓我想起了我[幫助]的人的可怕經歷。
24. 我很自豪我能做些什麼來[助人]。
25. 由於我[助人]的結果，我有被侵擾和令人恐懼的想法。
26. 我覺得“深陷”於制度的泥沼。
27. 我認為我是一個“成功”的[助人者]。
28. 我不記得我的工作當中那些是跟創傷受害者有關的重要部分。
29. 我是一個非常有愛心的人。
30. 我很高興我選擇了做這份工作。

 The Education University  
of Hong Kong Library

For private study or research only.  
Not for publication or further reproduction.

## Appendix G Questionnaire: FFMQ-C

## 五維度正念問卷

編號：\_\_\_\_\_ 測試日期：\_\_\_\_\_

請根據以下給予的等級來評定每句話，並在最符合您真實想法的等級數字下面打“O”。

1	2	3	4	5		
一點也不符合	較少符合	有些符合	很符合	完全符合		
1.	在行走時，我會有意關注身體部位在行進中的感覺。	1	2	3	4	5
2.	我擅長於用言語描述我的情感。	1	2	3	4	5
3.	我為自己有不理智的情緒或不合適的情緒而責備自己。	1	2	3	4	5
4.	我感受到了我的情緒和情感，但我不必對它們做出反應。	1	2	3	4	5
5.	在做事的時候，我經常走神，而且很容易被干擾。	1	2	3	4	5
6.	在洗澡時，我會留心于水淌過身體的感覺。	1	2	3	4	5
7.	我能清晰表達自己的信念、觀點以及期望。	1	2	3	4	5
8.	我沒有注意到我在做什麼事情，這是因為我在做白日夢，在擔憂或分心於外界。	1	2	3	4	5
9.	我觀察自己的情緒，而不迷失其中。	1	2	3	4	5
10.	我告訴自己，我不應該以我現在的這種方式來感受此時的情感。	1	2	3	4	5
11.	我留意到食物和飲料是如何影響著我的想法、身體的感覺和情緒的。	1	2	3	4	5
12.	我難以找到詞語來表達我的所思所想。	1	2	3	4	5
13.	我很容易分心。	1	2	3	4	5
14.	我認為我的一些想法是異常的、不好的；我不應該那樣想。	1	2	3	4	5
15.	我會注意我的一些感覺，比如：微風吹拂我的頭髮、陽光照在我的臉上的感覺。	1	2	3	4	5
16.	我很難用合適的言語來表達我對事物的感受。	1	2	3	4	5
17.	我會評判自己的想法是好的或是壞的。	1	2	3	4	5
18.	我難以把注意力集中在當前發生的事情上。	1	2	3	4	5
19.	當我有悲傷的想法或景象時，我會“退一步”，並去覺知那些想法或景象的存在，而不被其所控制。	1	2	3	4	5
20.	我會注意一些聲音，比如：時鐘的滴答聲、小鳥的唧喳聲、或者汽車穿梭的聲音。	1	2	3	4	5

21.	在困難的情境下，我會暫停一下，不馬上做出反應。	1	2	3	4	5
22.	當我身體有種感覺時，我很難找到合適的詞語來描述它。	1	2	3	4	5
23.	我好像是自動地在做一些事情，並沒有完全意識到它。	1	2	3	4	5
24.	通常，當我有令人傷感的想法或者景象時，我能很快恢復平靜。	1	2	3	4	5
25.	我告訴我自己，我不應該思考我此刻正思考的東西。	1	2	3	4	5
26.	我聞到了周圍一些東西的氣味或者芳香。	1	2	3	4	5
27.	即使是我感到非常地不安時，我也能找到詞語來表達它。	1	2	3	4	5
28.	我草草地完成一些事情，而沒有真正地集中注意力在其上。	1	2	3	4	5
29.	當陷入令人煩惱的情緒或情境中，我能做到只是去注意它們，而不做出相應反應。	1	2	3	4	5
30.	我想有些情緒是不對的或者是不合適宜的，我不應該體驗到它們。	1	2	3	4	5
31.	我注意到了藝術品和自然界中事物的一些視覺元素，如：顏色、形狀、紋理還有光和影子。	1	2	3	4	5
32.	我總是傾向於用詞語來描述我的體驗。	1	2	3	4	5
33.	當我有令人痛苦的想法或景象時，我通常只是去在注意它們，順其自然。	1	2	3	4	5
34.	我總是自動地工作或完成某項任務，而沒有意識到我在做什麼。	1	2	3	4	5
35.	通常當我有些令人困擾的想法或者景象時，我會根據我當時所想的内容或者腦海中出現的景象來判斷自己是對還錯。	1	2	3	4	5
36.	我會去注意，我的情緒是如何影響我的想法和行為的。	1	2	3	4	5
37.	我通常能夠非常詳細地描述出我此刻的感覺。	1	2	3	4	5
38.	我發現自己做事情的時候，不專心在所做的事情上。	1	2	3	4	5
39.	當不理智的想法出現時，我會自我否決。	1	2	3	4	5



## Appendix H Approval for the Application of Ethical Review



9 May 2017

Mr TUNG Ling Ngai  
Research Postgraduate Programmes  
Graduate School

Dear Mr Tung,

**Application for Ethical Review <Ref. no. 2016-2017-0293>**

I am pleased to inform you that approval has been given by the Human Research Ethics Committee (HREC) for your research project:

Project title: Using Mindful Self-Compassion (MSC) as a Strategy to Reduce Stress and Develop Self-Compassion in Nursing Students

Ethical approval is granted for the project period from 1 June 2017 to 31 August 2018. If a project extension is applied for lasting more than 3 months, HREC should be contacted with information regarding the nature of and the reason for the extension. If any substantial changes have been made to the project, a new HREC application will be required.

Please note that you are responsible for informing the HREC in advance of any proposed substantive changes to the research proposal or procedures which may affect the validity of this ethical approval. You will receive separate notification should a fresh approval be required.

Thank you for your kind attention and we wish you well with your research.

Yours sincerely,

Patsy Chung (Ms)  
Secretary  
Human Research Ethics Committee

c.c. Professor WANG Wen Chung, Chairperson, Human Research Ethics Committee

香港新界大埔露屏路十號  
10 Lo Ping Road, Tai Po, New Territories, Hong Kong  
T (852) 2948 8888 F (852) 2948 6000 www.eduhk.hk